JOURNAL

of The New Haven Colony Historical Society

F
98
.N3
J68
v. 29
no. 1

VOL 29 / NO 1

WINTER 1982

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THE NEW HAVEN COLONY HISTORICAL SOCIETY was founded in 1862 by a representative group of New Haven citizens. As stated in the Constitution adopted by the Society, revised in 1965:

"The object of the Society shall be the collection, preservation and publication of historical and genealogical matter relating to the early settlement and subsequent history, especially of New Haven and its vicinity, and incidentally of other portions of the United States."

The museum and library of the Society are open to the public. There is a fee of $2 to non-members for use of the library; the museum is open free of charge. In addition to the Whitney Avenue building, the Society owns the Pardee-Morris House at 325 Lighthouse Road, Morris Cove, New Haven. Built originally about the middle of the eighteenth century, it was burned during the British invasion in 1779. Rebuilt at once, it incorporates surviving portions of the older structure. The Pardee-Morris House is now restored and furnished appropriately and is open to the public during the summer months.

PUBLISHED BY THE NEW HAVEN COLONY HISTORICAL SOCIETY

ISSUED PERIODICALLY
THROUGH A BEQUEST OF GEORGE DUDLEY SEYMOUR

Membership in the Society carries with it a subscription to the JOURNAL.

Second Class Postage PAID at New Haven, Conn.

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Cover: Chapel Street looking west at State Street, with a car turning north onto State. The cars are typical products of the John Stephenson Company of New York. (Hall collection, Branford Electric Railway Association)

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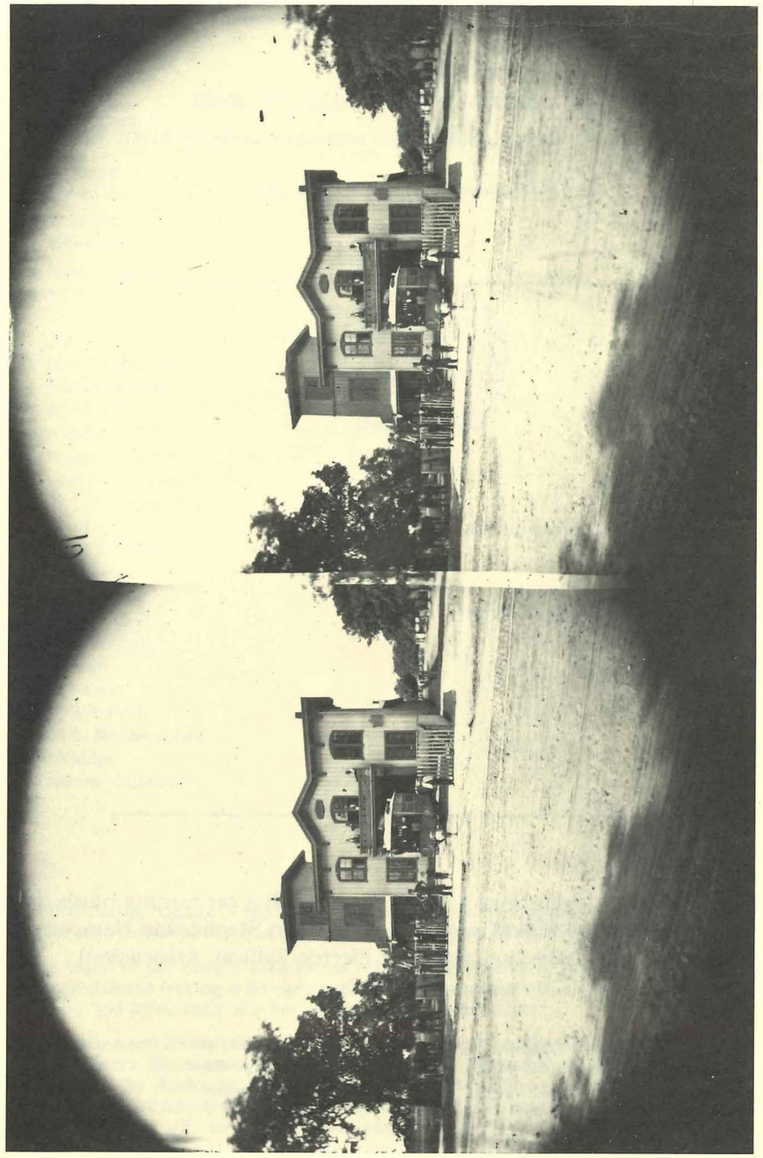


Grand Avenue car barn, Fillmore Street at right. A Philadelphia-type car, No. 18, is in front of the barn. This is one of the second order of cars, probably built by the Wason Company of Springfield, Massachusetts. Note the company sign in the gable of the building. (NHCHS collection)

Early History of Street Railways: The New Haven Area

by John R. Stevens

The opening of the New York and Harlem Railroad on November 14, 1832 marked the inception of the first street railway in the world. Its tracks were laid in the middle of the roadway, and the rails projected only slightly above the road surface. The first section of line to be opened ran one mile on Fourth Avenue and the Bowery from 14th Street to Prince Street in Manhattan. At the time, the city was sparsely populated at the north end of the line—a situation which was to change rapidly, largely because of the "street railroad."

The first horse-drawn passenger cars were constructed by a young coach builder, John Stephenson (1809-93). While incorporating certain patent ideas of his own, their design was based on that of contemporary English railway carriages.[1] The cars ran on four flanged, iron wheels, and had leather-strap springs. The bodies had three side-entered compartments, with facing seats. Additional seating was on the roof, for a total seating capacity of forty. The driver had a seat at both ends, as the cars were intended to be driven from either end.

The line was extended south to a point near City Hall and by 1837 had been built northward to the Harlem River. Before this happened, however, it was divided into two parts, the section below 32nd Street being worked by four-wheeled "city cars" and the section north of 32nd Street by steam-locomotive-hauled trains.

In 1841, the line had 140 horses and six steam locomotives; ten train cars of various types; and twenty "city square cars." At that time, one of the original three-compartment cars still survived. There were also thirteen baggage and work cars.

Connections with the New York and Harlem made it the access to New York from Connecticut, and service to New Haven opened in 1848. The New York and Harlem, and the New Haven Railroad stations were situated in the block between 26th and 27th streets, and between Fourth and Madison avenues. After 1843, the Stephenson omnibus factory was located on the north side of 27th Street, facing the New Haven station. The steam locomotives were taken off the long-distance trains at the south

Sign from the car barn was moved to the repair shop after the barn was demolished (ca. 1888), later to the Connecticut Company's bus garage. (J.R. Stevens collection)

end of the Murray Hill Tunnel at 32nd Street, and cars were hauled, each by four horses, to the 27th Street station. This arrangement persisted until the opening of Grand Central Terminal in 1869.

The next street railway line to be constructed was the New Orleans and Carrolton Railroad's Charles Street Line in New Orleans, which opened January 13, 1835. For a time, steam locomotives were used on it in addition to horses, but later the inner portion of the line became a streetcar line, and it remains so today. Service is provided by a fleet of standard electric cars built in the 1920s.

After a slow start, with lines only in New York and New Orleans for a period of almost twenty years, there was a burst of activity in the early 1850s. Lines on Second, Third, Sixth and Eighth avenues in New York were opened in 1853. Brooklyn's first line commenced operation in 1854, and by 1860 there were 160 miles of street railway in Manhattan and Brooklyn. The first line in Boston opened in 1856. Numerous lines were built in Philadelphia after 1858; by 1860 there were eighteen separate street railway companies operating on 155 miles of line. By that date also, most large American cities had street railways, and smaller towns were getting them as well. In this third wave of street railway construction in the early 1860s, the Fair Haven and Westville Railroad was built (see following article).

Cars

The English type of railway carriage did not remain in favor long. By 1835, the standard American railroad car, running on eight wheels, and having end platforms, a central aisle and reversible seats, was introduced. The "city cars" of the New York

and Harlem were smaller, four-wheeled versions of these, and had longitudinal seats like an omnibus. This type of car continued to be built into the 1850s. Such cars were heavily constructed and strained the horses that pulled them. John Stephenson, who had built much of the early rolling stock for the New York and Harlem, was forced into bankruptcy by the failure of some railroad companies for whom he had built equipment, and he swore that he would never again build railroad cars. Henceforth his production consisted entirely of omnibuses until 1855, when he constructed a lightweight street railway car using a standard omnibus body.[2] Heavy sixteen-foot cars continued to be the standard employed, however.

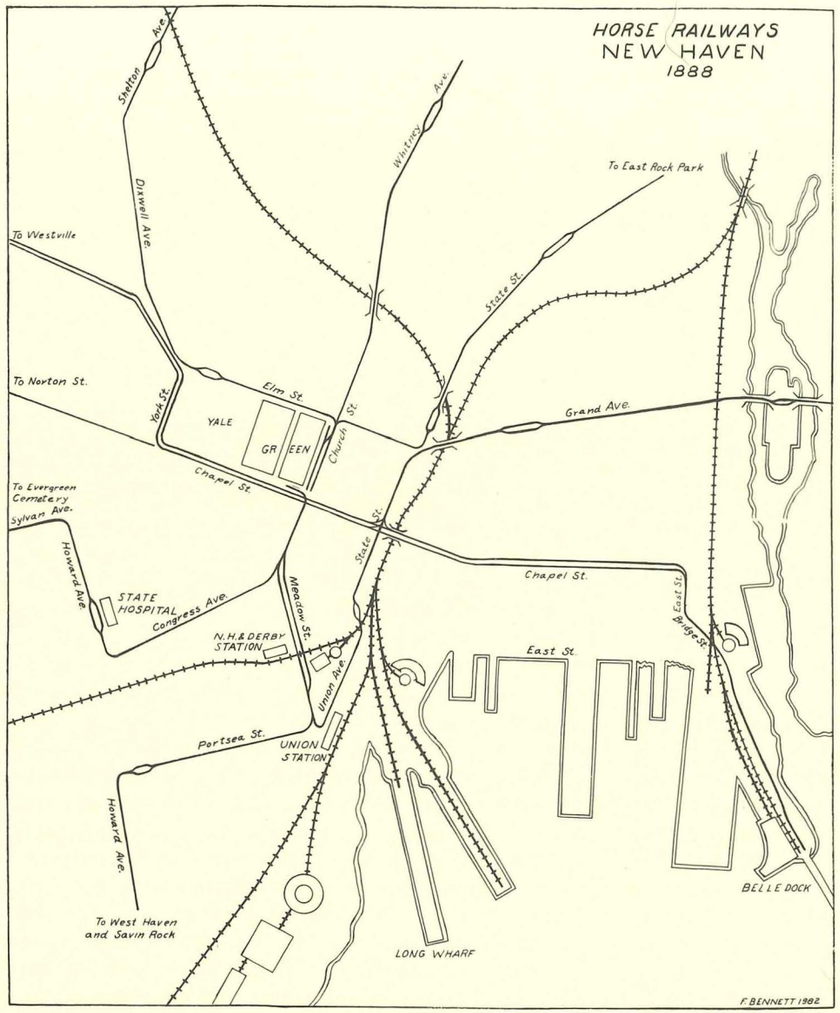
John Stephenson engaged in the construction of streetcars in earnest after 1860. He developed a lightweight car of conventional design that made the work much easier for horses pulling it. At the time of his death in 1893, Stephenson was the largest builder of streetcars in the world. His firm built many of the streetcars, closed and open, used in New Haven. By then, the J.G. Brill Co., founded in Philadelphia in 1868, was about to take over leadership in this field. In 1907, Brill absorbed the Stephenson Company. From the 1880s, Brill supplied many of the streetcars used in New Haven, and horsecars also were supplied by the Lewis & Fowler Company, located in Brooklyn.

No illustrations have been found of any of the first six horsecars used in New Haven. There are references to them being drawn at first by one horse, but they were found to be too heavy, so two-horse teams were soon used to pull them on lines with even modest grades. Possibly they were like the first cars of the Hartford and Wethersfield Horse Railway Co., of which one photograph exists. These were seven-window vehicles built by the Wason Car Manufactory at Springfield, Mass. Their design followed the Philadelphia style originated c. 1858 by Andrew Palles. One of the last of these original cars is referred to in the company's 1878 annual report, when a small car, in use sixteen years, was traded for a larger one.

Of the second group of cars purchased there are photographs of car No. 13, including one of the scrapped body, taken in 1892. It was a sixteen-foot car, typical of the heavy Philadelphia design of the late 1850s. The original cars were probably a shorter version of this type. That No. 13 was built by the Wason company is indicated by certain design features it shared with Hartford & Wethersfield No. 1, which was purchased in 1862 and remained in use until 1894. The New Haven car is somewhat older in style, as can be seen by the way its roof extends over the platform, instead of having separate hoods, as the Hartford car had.

New Haven & Centerville Street Railway cars Nos. 1 and 4 were of the same body length and had the same window spacing as F.H. & W. No. 13. Structural features that were similar to No. 13 would indicate that these cars, probably built in 1865, represent a modernization of style by the Wason company.

John Stephenson described the streetcars in use until the early 1860s as "regular horse killers," and he developed an ultra-lightweight design with a short body (ten or twelve feet) that could be drawn by a single horse and required only one man as a


HORSE RAILWAYS
NEW HAVEN
1888
Shelton Ave.
Dixwell Ave.
Whitney Ave.
To East Rock Park
To Westville
State St.
To Norton St.
Elm St.
Yale St.
YALE
GR
EEN
Church St.
Grand Ave.
To Evergreen Cemetery
Sylvan Ave.
Chapel St.
Howard Ave.
STATE HOSPITAL
Congress Ave.
Meadow St.
State St.
Chapel St.
East St.
Bridge St.
N.H. & DERBY STATION
Union Ave.
East St.
Portsea St.
UNION STATION
Howard Ave.
To West Haven and Savin Rock
LONG WHARF
BELLE DOCK
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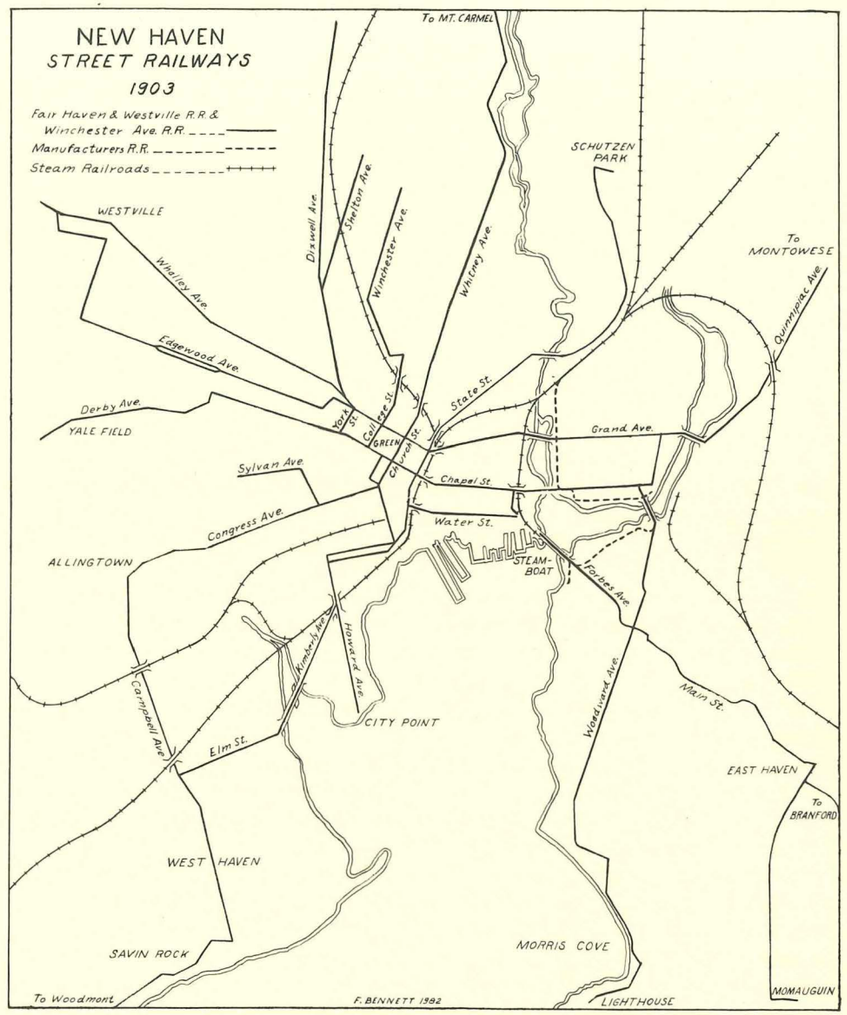

NEW HAVEN
STREET RAILWAYS
1903
Fair Haven & Westville R.R. & Winchester Ave. R.R.
Manufacturers R.R.
Steam Railroads
To MT. CARMEL
SCHUTZEN PARK
WESTVILLE
Whalley Ave.
Dixwell Ave.
Shelton Ave.
Winchester Ave.
Whitney Ave.
To MONTOWESE
Quinnipiac Ave.
Edgewood Ave.
Derby Ave.
YALE FIELD
York St.
College St.
Church St.
State St.
GREEN
Grand Ave.
Sylvan Ave.
Chapel St.
Congress Ave.
Water St.
ALLINGTOWN
STEAM-BOAT
Forbes Ave.
Howard Ave.
Campbell Ave.
CITY POINT
Woodward Ave.
Main St.
Elm St.
EAST HAVEN
To BRANFORD
WEST HAVEN
SAVIN ROCK
MORRIS COVE
To Woodmont
F. BENNETT 1982
LIGHTHOUSE
MOMAUGUIN

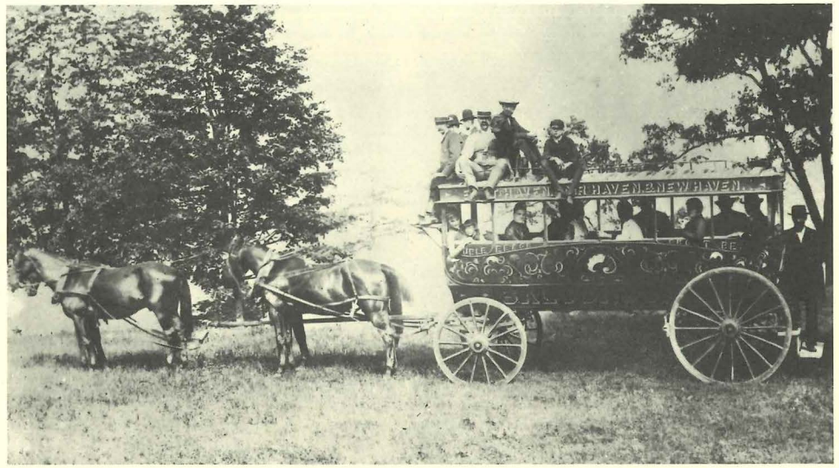
New Haven omnibuses of the Orange Street Line. These vehicles are typical city omnibuses of the latter half of the nineteenth century. (Van Name collection, Library of Congress)

crew. Such cars had built-in fare boxes. A popular version of the fare-box car was the "bobtail," single-end design, which required turntables in the street to reverse its direction. Bobtail cars were used by the Hartford & Wethersfield, starting in 1869.

In 1865, the F.H. & W. contemplated the use of one-horse, one-man cars on several routes, but the superintendent, E.B. Munson, recommended against this change, which apparently was not carried out. There is no indication in photographs of any New Haven horsecar having built-in fare boxes. All New Haven horsecars were double-ended, and the horses had to be changed from one end of the car to the other at the end of the line—a heavy task for the car driver, who had to lead the horses and carry the attaching gear.

Closed horsecars were built in standard lengths of ten, twelve, fourteen and sixteen feet, with five, six, seven and eight side windows. By the late 1880s larger windows were in style. The construction details of a closed horsecar are given in illustrations from *Street Railways,* by C.B. Fairchild.[3] The car shown is a six-window, sixteen-foot-body car, like a group of cars built for the New Haven & Centerville by Stephenson in 1891. The interior view is of a similar car built by Lewis & Fowler. This firm supplied cars to the F.H. & W. from 1890 to 1892.

Horsecar "running gear" was attached directly to the car sills. The axle boxes had two coil springs each, although rubber springs were used in the early period (New Haven & Allingtown No. 1). Brass friction bearings were mostly used, but there was some experimentation with roller bearings, which were found not to stand up to the service required of them. Wheels of thirty-inch tread diameter were of cast iron with



The New Haven-East Haven stage provided suburban transportation before the time of the trolley. (Hall collection, BERA)

chill-hardened treads and flanges. Brake shoes of soft cast iron were pressed against the wheels of a simple arrangement of levers and put on by a pull rod attached to a chain that was wound around the lower end of the "brake staff," actuated by a "goose-neck" handle. A foot-operated pawl secured the brakes when applied by the driver.

The early Philadelphia-type cars, like F.H. & W. No. 13, had a two-part window sash. The top sash, with shaped opening and decorated glass, was fixed; the lower sash slid up behind it. Most horsecars and early electric cars had sashes that dropped into a pocket between the sidewall and the seat backs. Each side window opening was also fitted with a slatted blind that was stored in the wall pocket.

Nearly all of the horsecars used in New Haven had "duck's back" or "Bombay" roofs. The basic sectional shape was the same for both, but the "Bombay" designation indicated the presence of a row of small, hinged ventilator sashes. The length of this clerestory section varied from about a third of the length of the roof to almost the full length. The glass in these sashes was frequently decorated. Sometimes the glass was "flashed" with color on one side, and a design or lettering was sandblasted, removing the colored surface. Some electric cars were built with "Bombay" roofs, but a change to the monitor deck roof took place in the early 1890s. The type of roof used by the first electric open cars of the New Haven & West Haven Co. was unusual, with their high, arched shape and end windows. These cars were built by the Newburyport Car Co., in Massachusetts.

The interior of a typical horsecar was rather plain. The roof "ribs" and boarding

CITY PASSENGER R. R. CAR.
KIMBALL & GORTON
PHILADELPHIA R. R. CAR MANUFACTORY.
21st & Hamilton Streets
PHILADELPHIA.
Manufactory of every description of Rail Road Passenger and Freight Cars, of any design or dimension required

A Philadelphia-type horsecar of the same design as the first New Haven cars (see p. 2), shown here in a lithographed builder's advertisement, ca. 1859. (Historical Society of Pennsylvania)

were exposed, and were varnished. Roof boards were alternately light- and dark-colored wood, and platform hoods were frequently treated the same way. Over the windows, panels on the inside often had decorative paintings, as still survive in New Haven & Centerville horsecar No. 10.

Car exteriors were painted like fine carriage work, with many coats of paint rubbed down and finished with varnish to a glassy smoothness. Ornamental scrollwork and striping, decorative lettering and car numbers made horsecars very attractive. They were "street ornaments" that generated civic pride. The cars used in service to the railway depot by the West Haven and Winchester Avenue companies were painted all white, and were called "white depot cars." This custom was passed on to the early electric cars.

Two-man horsecars had bells mounted under the platform hoods for the conductor to signal the driver when to start and stop the car. A leather bell rope ran the length of the car on each side, just below the ventilator windows on a closed car, or close to the sides in the case of open cars. In order to warn other road traffic, a bell was also part of the team's harness. With the advent of the electric car, a foot-operated gong was mounted under the end platforms.

The car interior had seats along each side. The backs were usually of formed plywood with a perforated design; seat bottoms often were covered with carpeting. The only night light, at least in older cars, was from lamp boxes in the right-hand corners at each end; this showed exteriorly through a bullseye lens and provided

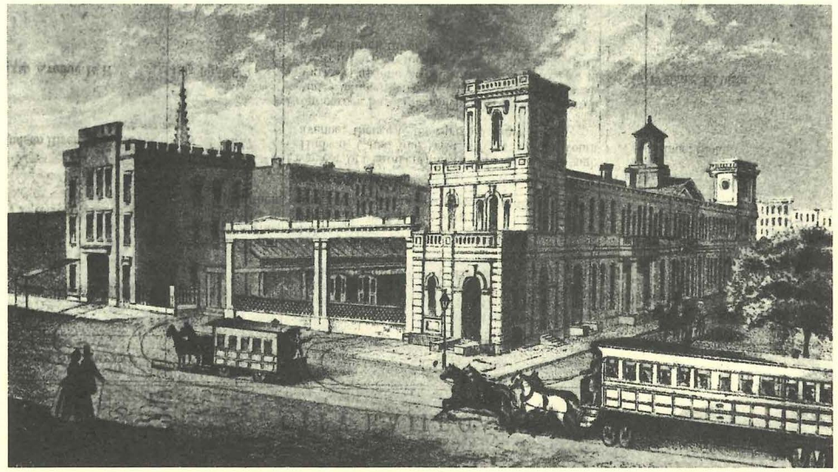
some interior light through the glazed door of the lamp box. There was a sliding door in each end bulkhead, and in each of these doors there was usually a slide in an oval opening so that a passenger could pass his fare to the conductor on the rear platform. In winter, the wood-slatted floor was covered with straw to a depth of some inches in the hope that this might keep the passengers' feet warm. Later cars were equipped with elaborate kerosene-burning ceiling lights with mirrored ripple-glass reflectors, and with a stove that in winter occupied the middle seat space on one side of the car.

Open cars were popular in summer and were present in New Haven with a variety of seat configurations. Most had reversible seat backs, although some had facing pairs of seats. Open cars spent most of the year languishing in the car barn and thus did not earn proportionately as much as the closed cars. Yet they provided an amenity much enjoyed by the public.

Electric operation came to Connecticut in 1888. The first line, opened May 1, was the Ansonia, Derby & Birmingham line of the Derby Horse Railway, equipped by Charles J. Van Depoele of Chicago.[4] This line was soon supplied with more advanced equipment provided by the Thomson Houston Co., of Lynn, Massachusetts, which had bought out Van Depoele soon after the opening of the line. The next line to open was in Meriden, where the horsecars were electrified by Leo Daft, beginning on July 11. This operation was a failure, and the cars soon were horse-drawn again. On September 21, 1888 electric operation on the Sprague system commenced on part of the Hartford & Wethersfield Horse Railway Co. Thus, the three pioneer Connecticut electric lines were installed by the three principal American inventors in that field. Frank Julian Sprague became the most famous of these because his system incorporated the standard features of the developed trolley car: a separate truck containing the running gear and motors; motors that were attached and geared to the axles; platform controllers; and an under-running trolley wheel on the end of a trolley pole, held against the power wire by spring tension. Negative return was through the running rails.

New Haven did not get electric cars until 1892, following the experimental phase, although there were several trials from 1889 to 1891 with storage-battery cars. The earliest electric cars were only a little larger than the horsecars they replaced, but were much more strongly built and considerably heavier. Some horsecars were converted to electric motor cars, and others to trailers. The motor car conversions proved unsatisfactory, for the lightly built horsecar bodies could not stand the strain of faster electric operation. The roofs especially were not strong enough to carry the weight of the trolley base and pole. Electrified horsecars usually had a very short life span. Being four-wheeled and having hand brakes only, the early electric cars built as such were largely obsolete by 1900, when the first eight-wheeled (double truck) electric cars of large passenger capacity were introduced. These large cars had air brakes and were intended for use on the company's suburban lines.

The first early closed electric cars had open platforms, like those of horsecars



*Railroad depots, Fourth Avenue at 27th Street, New York. New Haven station (right) faced Stephenson factory. A city horsecar is at left; railroad passenger car at right. (*Valentine's Manual of New York, *1860, Museum of the City of New York)*

except that a number of them had entrances only at one side of each end for rear entrance and exit. The Fair Haven & Westville and the New Haven & Centerville electric cars were generally like this. In the late 1890s, the platforms were partly closed for protection of the motorman, and photographs show that this adaptation was not well integrated with the car design. For example, the windows had to be built in front of the dash to allow for the swing of the "gooseneck" handle. The double-truck cars ordered in 1900 came with enclosed platforms, including doors at the steps. In operating practice, the rear door was always left open.

Steps of the open cars were really too high for the comfort of women and the elderly. This condition was bad enough on horsecars and early electric cars with thirty-inch wheels. The use of thirty-three-inch wheels and swiveling trucks on the large, fifteen-bench open cars purchased after 1900 made the climb both difficult and dangerous, with only a single runningboard between the ground and the car floor. A New Haven man in 1896 patented a double-step arrangement for open cars,[5] no doubt based on his experience with local vehicles. However, double runningboards were not installed on the double-truck open cars until some years after the Connecticut Company took over.

The closed cars built for or inherited by the Fair Haven & Westville Company had longitudinal seats, with the exception of the parlor car and cars of the West Shore Co. This was largely because of narrow body width and the curved-side shape, which made the width of the car at the floor only a little over six feet. The five double-truck

cars ordered from Brill in 1901 had reversible cross seats on both sides of an aisle. These cars were "semi-convertible," in that both upper and lower side window sashes could be dropped into sidewall pockets when desired.

With the change to electricity, electric heaters replaced coal stoves. The cars were equipped with fan registers. One of the largest manufacturers of these was located in New Haven—The New Haven Car Register Company. Another local supplier to the industry was the Kelsey Electric Railway Specialty Company, which manufactured hand-brake and trolley equipment.

What remains of New Haven's early streetcars? The roof of New Haven & Centerville horsecar No. 10 (c. 1886) survives as part of a garden shed. A number of early electric cars continued to be used by the Connecticut Company until closure in 1948. Some of these cars were obtained by museums. The fifteen-bench Fair Haven & Westville open car No. 355 (1902) is being restored by Warehouse Point Trolley Museum, and the same museum has F.H. & W. "box car" No. 154 (1902). The Seashore Museum in Kennebunkport, Maine, and Branford Trolley Museum each have a Winchester Avenue fifteen-bench open car—Nos. 302 and 303 (1901) respectively.

Accidents

As would be expected, over the years horsecars were involved in many accidents, mostly of a minor nature, involving passengers, pedestrians and other horse-drawn users of the road. A potentially dangerous situation existed at the Steamboat Wharf. Here the streetcar tracks crossed those of the steam railway, in order to have access to the terminal siding on the wharf. In 1878, a horsecar was struck by a steam locomotive and damaged beyond repair.

A similar near-accident occurred in 1889, when, to quote the *New Haven Union* of January 25: "There was a narrow escape from a collision at the Derby Crossing on Meadow street about 1:30 this afternoon. A West Haven horsecar well filled with passengers was coming down the street. The horses were on the track before the approach of the train was noted by the gateman. The driver noticed the danger, lashed the horses and succeeded in getting the car across the tracks just as the train passed."

There also were occasions when the horses decided to take their vehicles where there was no track. In July of 1889, car No. 10 of the State Street line was taken for a rough ride on Edwards Street when its horses bolted and ran away with it. Reporting on the incident, a local newspaper said, "No damage but a great deal of fright to a car full of passengers."

One of the worst recorded accidents happened at 10 p.m. on October 31, 1900. Fair Haven & Westville car No. 75 was inbound on Whalley Avenue near the Boulevard, running "wrong rail" because of a broken trolley wire. The motorman of outbound car No. 101 was unaware of the overhead wire problem and did not expect an opposing car on his track. The two cars collided "with terrific force." The front

platform of No. 75 was pushed into the body by No. 101, and every piece of glass on the car was broken. By some miracle the motorman survived and was found in "the tangled mass of iron and woodwork which some seconds before had made up the front platform. . . . " His scalp was cut, and one foot "fearfully lacerated" to the point where it was doubted that it could be saved. The conductor and a lone passenger on the car were shaken up but otherwise unharmed. Car No. 101 suffered only a bent dash, and its crew received a few bruises from the abrupt stop.

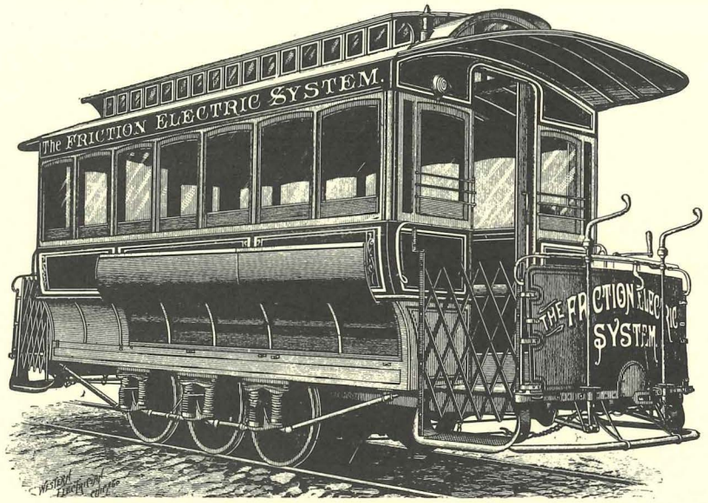
On Saturday, July 26, 1902 a bad accident occurred on the Branford line,[6] in that portion still in use (1982). The west end of the line had been double-tracked as far as the Trap Rock quarry in 1902. At this location there are blind curves in both directions. Regular car No. 145, bound for Branford, was waiting at the switch when the first of three special cars bound for New Haven passed it, the motorman of the special signaling with his hand that a second car was following. There was a question as to whether the motorman of the second special car signaled that there was yet another behind him. The motorman of No. 145 later testified that no such signal was given. After a few minutes' wait, car 145 left the siding and shortly collided with the last special car, killing its motorman. Nineteen passengers were injured in the accident.

Alternatives to Horse Power

Running a horse railway was an expensive proposition, largely because of the large number of horses that had to be stabled, fed, groomed and otherwise cared for. Before the overhead-supplied electric car was a proven success, many schemes were promoted to do away with horse haulage. The cable method, first used in San Francisco, had a fairly wide following and had application in a number of large cities, notably New York, Washington, Chicago and Denver. Providence was the only New England city to have a cable line. Other experimental methods of propulsion included storage steam, ammonia, compressed air and naphtha.

In July 1889, the superintendent of the New Haven & West Haven Horse Railroad proposed the use of a "steam motor" to haul trains of horsecars between the depot in West Haven and the West River bridge.[7] There is no report to indicate that such a piece of equipment was tried, however.

Earlier the same year, it was announced that "an electrical car will be running in a few weeks on the Fair Haven and Westville horse railroad and will be run by the Company to give the directors and patrons of the road an opportunity to ascertain how they would like the new motive power."[8] The vehicle in question was of the patent "Friction Electric System."[9] It had eighty-four storage batteries in racks under the side seats, with access doors to them on the outside of the car. It was supposed to run sixty miles on one charging of the batteries. A peculiarity of this car was that it had three sets of closely spaced wheels. The vehicle had been tried in Brooklyn and was sent from there to Hartford, but its operation was not permitted on the horsecar track in Hartford because it was too heavy and the track in too poor condition. An arrangement was made with the management of the Fair Haven & Westville to bring

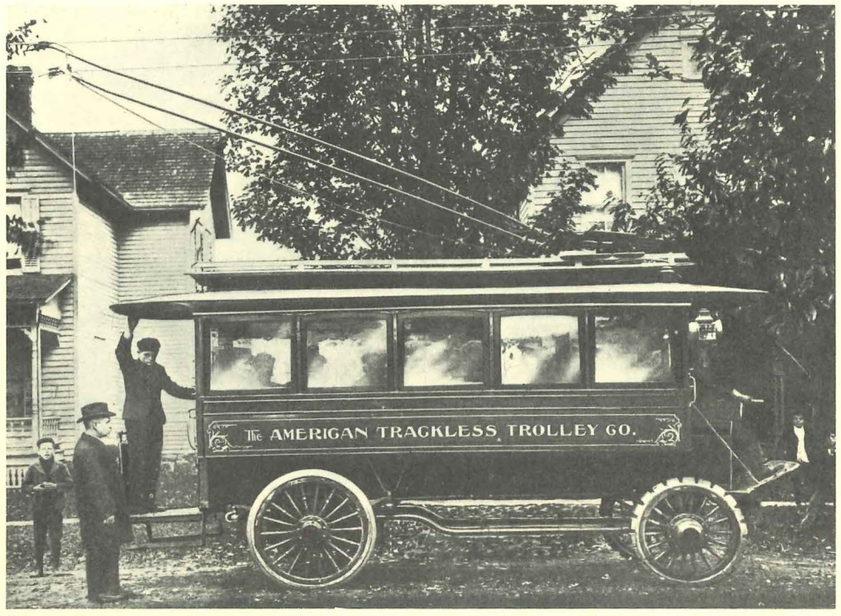


The battery car that was run in New Haven in 1889. Engraving from Fred C. Whipple, The Electric Railway *(Detroit, 1889).*

the car to New Haven, as the New Haven line had new, heavy track from University Place (near the Green) to Fair Haven, on which it could be tried. The car arrived early in July, and immediately became involved in litigation between rival parties who claimed the right to operate it for the planned trials. The United States Machine Co. of New Jersey had built the equipment for the car and thought it was their prerogative to run it, but the Hartford Dynamic Co. claimed that under agreement they were to conduct the tests. A steam-powered battery-charging plant was built adjacent to the car barn.

On July 19, legal impediments having been cleared away, the car was finally run. Its performance left something to be desired, as a number of the batteries had been damaged by the long delay. The car started on a grade on Grand Avenue and came off the tracks twice. On subsequent trials it ran reasonably well, and was tried on the West Haven line, from New Haven Green to Howard Avenue. It also was run on the State Street line. The battery car's great problem was its propensity to derail on switches—hardly surprising, considering its six-wheeled truck. It caused so many delays to the service of regular horsecars that it was removed from service early in August. The Fair Haven & Westville considered it a failure, and soon it was gone from New Haven.

In 1891 the West Haven line permitted a storage-battery car to be tried on its tracks.[10] The car body and battery equipment had been used in Detroit, and they came to New Haven without running gear or motor. The car body was built by the



The trolley bus used experimentally in New Haven in 1903. Photo from Street Railway Journal, *1903.*

Pullman Co. in Chicago. It was painted yellow and was lettered "Rapid Transit Strut Railway No. 9." The batteries were supplied by the Detroit Electrical Battery Co. The truck and electric control system were made in New Haven by H.G. Thompson & Sons.[11] The motor was supplied from New York, and did not function as well as had been anticipated. The car body arrived in January, but the vehicle was not ready to be tested until the middle of April, and after reaching the Green, the motor gave out. Toward the end of May, the motor problems having been corrected, the car made a number of trips between the Meadow Street car barn and the Green. The results of the tests were unfavorable, however, and on June 10 the car was dismantled.[12] Electric operation using the overhead trolley system began on the West Haven line on June 13, 1892. The Fair Haven & Westville did not run electric cars until October 15, 1894.

There had been attempts from the earliest years of experimentation with electric propulsion to power free-wheeling vehicles from an overhead source. One of the first American tests took place in New Haven. A vehicle supplied by the American Trackless Trolley Co. was demonstrated to a group of potential investors some time in 1903.[13] The power source was probably the Fair Haven & Westville. The date and

The first electric locomotive of the Manufacturers Railway was built by the General Electric Company in 1893. When it proved impractical for its intended use on an elevated railway, Manufacturers bought it for switching freight cars, a task it was able to perform. Photo from Street Railway Journal, *1897.*

location of the test have not yet been determined. In November 1903, the vehicle was demonstrated in Scranton, Pennsylvania.

Trolley bus operations on a permanent basis finally came to be established in a number of American cities in the 1920s. Today Boston and Philadelphia each have fleets of recently built trolley buses, in addition to new-model streetcars.

Electric Switching of Freight Cars

Manufacturers Railway thirty-ton locomotive No. 1 was built by the General Electric Co. at their Lynn, Massachusetts works in 1893. When it was displayed in Chicago at the 1893 World's Fair, the manufacturer described it as "the first practical electrical locomotive ever constructed." In many ways, it was a small-scale prototype for the Baltimore Belt Line tunnel locomotives that were built the following year. The thought in building the thirty-ton locomotive was that it could be used to replace steam locomotives on the Manhattan elevated railway. This was not to be, and it was purchased for use on the Manufacturers Railway late in 1896. It performed satisfactorily its duty of switching freight cars, with backup from locomotive No. 2, which was converted from a Fair Haven & Westville snow plow. Eventually it was

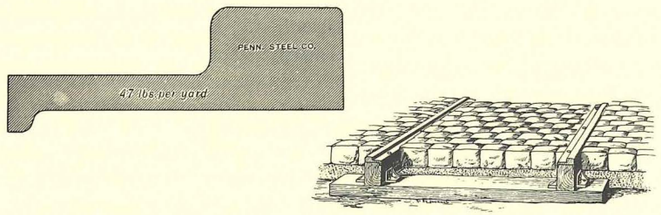
replaced by larger machines, but it is still in existence, preserved at the Museum of Transport at St. Louis, Missouri.

The Branford Line

The Branford Electric Railway was opened on July 31, 1900, operating between Hemingway Avenue in East Haven, and Court Street, Short Beach, and using equipment leased from the F.H. & W. Co. This line was extended to Branford Center by August 14. The line continued to use F.H. & W. cars until the operation was taken over by the Consolidated Railway in 1905. In 1947, the newly formed Branford Electric Railway Association purchased from the Connecticut Company the portion of the Branford line (about 1.5 miles in length) between the end of River Street, East Haven and the north end of Court Street in Short Beach. Essentially, this is the original line of the Branford Electric Railway. Electric-car operation on the line, instituted with F.H. & W. equipment in that year, is still continued by B.E.R.A., which operates the Branford Trolley Museum. It is the oldest suburban trolley operation to survive in the United States. The line was nominated to the National Register of Historic Places by the Connecticut Historical Commission in 1981.

Track Construction

Horsecar track differed in some details from steam-railroad practice. Flat-bottomed light rail (strap rail) was screwed to stringers that ran in the same direction as the rails. The stringers were carried on widely spaced cross ties that were attached to the stringers through the medium of cast-iron chairs. The wooden structure was buried, and being of untreated timber, was prone to decay. The earliest form of rail known to have been used in New Haven was the Philadelphia pattern of step rail. This was widely used in the United States and Canada.



*Cross-section of original horsecar rail used in New Haven (*American Street Railways, *1888); and original horsecar track in New Haven (*Street Railways, *1892).*

By 1889, the F.H. & W. line, from University Place to Fair Haven, had been re-laid with 52-pound-to-the-yard "steam rail" ("T" rail), and plans were made to have the whole line re-railed in a few years.[14] The rebuilt track was constructed in standard steam-railroad practice on closely spaced cross ties. Trackage on paved streets in

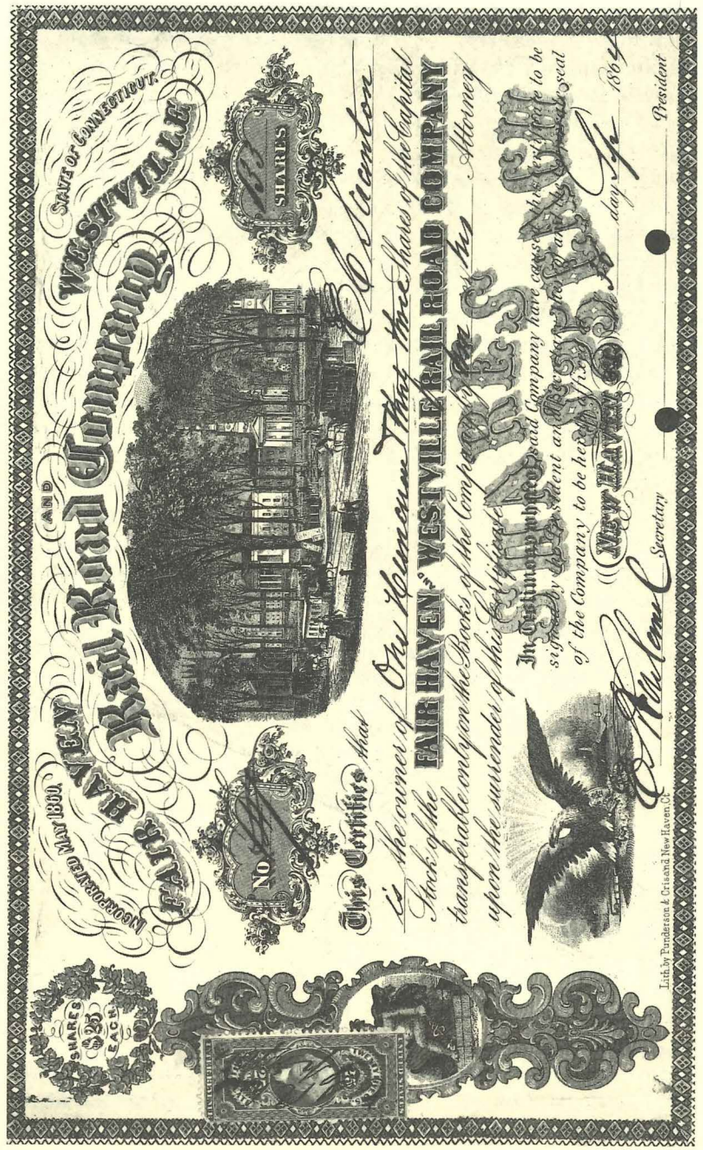
New Haven never used the grooved girder rail that was employed in most cities. Cast "tongue" switches were used. The streetcars shared trackage with the Manufacturers Railway for two blocks on East Chapel Street, where the track was built to accommodate railroad freight cars.

Overhead Construction

The trolley wire of hard-drawn copper was supported over the center of the car track by means of hangers, attached to the span wires, and ears attached to the power wire were fastened to the hangers. Usually the wire was suspended twenty feet above the road surface. The design of these fittings very early (1890) achieved their final form, as can be seen at the Branford Trolley Museum, as well as in existing trolley operations at Boston, Newark and Philadelphia. The overhead was divided into sections by section insulators, and each section was fed by feeder wires from the power plant or sub-stations that were carried on the street-side poles, and tapped to the trolley wire at intervals. The overhead fittings that directed the trolley wheel to diverging wires were called "frogs."

NOTES

1. John H. White, Jr., *The American Railway Passenger Car* (1978).
2. One of these is preserved in the Museum of the City of New York, and there is another at Harold Warp's Pioneer Village, Minden, Nebraska. These are the oldest streetcars in existence.
3. Street Railway Publishing Co., 1892.
4. In addition to carrying passengers, this line was exceptional in having a freight service in which a 75-hp "motor" was used. Although used during only two years (1888 and 1889), this machine has survived and in April 1982 was added to the collection of the Branford Trolley Museum, having been purchased by the writer at the auction of the Danbury Fair fixtures. This is the oldest piece of electric railway equipment surviving in the United States, and is the oldest standard-gauge electric locomotive in the world. It had come into the possession of the New Haven Railroad early in the century, and became part of their historic collection. These pieces were sold to the Danbury Fair in 1951.
5. *Street Railway Journal,* 12 (1896): 253.
6. *New Haven Evening Record,* July 28, 1902.
7. *New Haven Evening Register,* July 22, 1889.
8. *New Haven Union,* April 12, 1889.
9. Fred H. Whipple, *Electric Railways* (1889).
10. *Street Railway Journal,* 7 (1891): 98, 226.
11. *New Haven Evening Register,* April 10, 1891.
12. Ibid., June 10, 1891.
13. John Anderson Miller, *Fares Please* (New York: Dover, 1960; original edition published 1941), p. 171.
14. *New Haven Evening Register,* July 2, 1889.



A Fair Haven & Westville stock certificate decorated with an engraving of horsecars at Church and Chapel streets and a view of the Green. The horsecars are an early type not used in New Haven. (J.R. Stevens collection)

The Fair Haven & Westville Railroad

by Morley J. Kelsey

The City of New Haven was founded in 1638. Situated at the head of one of the best harbors on the coast, it soon became a busy shipping center. In time, manufacturing became the major source of income, and by the time of the Civil War New Haven was known as the manufacturing center of southern New England. Guns, clocks, boots, carriages, cigars, corsets, hardware, pianos and organs were produced at some 370 industrial plants in the area.

As the city grew, villages took shape nearby. These included West Haven, Westville, Woodbridge, Whitneyville, East Haven, Fair Haven and Centerville.

Fair Haven, probably the most vigorous of these, grew between the Mill and Quinnipiac rivers to the east of the city's center. It thrived on oysters and other products of the rivers and nearby harbor. At its peak, Fair Haven produced almost 5,000 gallons of oysters per day in season. In its earlier days Fair Haven could be reached only by boat, on foot or on horseback. In time dirt roads were laid out, permitting the use of horse-drawn vehicles.

Westville, some three miles west of the city, grew around its shops and mills located on the banks of the West River. Early endeavors included a paper mill, grist mill, tool factory, match factory, harness shop and others. Like Fair Haven, it was not easily reached until roads were built—and they were often made impassable by storms and spring floods.

As the Civil War approached, some of the city's streets had been paved and horse-drawn omnibus services had been established to outlying areas. King's Fair Haven Omnibus provided an hourly service with vehicles leaving the railroad station in New Haven at 8:30 a.m. and running until 8:30 p.m., return trips leaving King's Hotel at the corner of Grand and Front streets in Fair Haven every hour from 8:00 a.m. to 8:00 p.m. Toward the end of this service, the last run in either direction was changed to leave one half hour later. The fare was three cents.

Pope's Westville Omnibus left the depot in New Haven at 9:30 and 11:30 a.m. and

at 2:00, 5:00 and 8:30 p.m. Runs into the city left Westville at 8:00 and 10:30 a.m., as well as 1:00, 3:30 and 6:30 p.m.

In 1860 a group of New Haven businessmen united to form a horse railroad company to provide better service between Fair Haven and Westville. On June 20, 1860 a charter was granted to Henry Peck, N.D. Sperry, Benjamin Noyes, S.L. Blatchley, James F. Babcock, Edwin Marble, Smith G. Tuttle, Lucius G. Peck, L.R. Finch, William M. White, John B. Carrington, Thomas W. Ensign, George A. Shubert, Seth M. Benton, Alfred C. Sperry, E.B. Munson and E.S. Rowland to build and operate a horsecar line of one or two tracks between Fair Haven and Westville.

The charter provided that the line was to run from a point at or near the east end of the Fair Haven bridge via Grand Street,* Olive Street, Chapel Street, York Street, Broadway and Whalley Avenue to Blake Street and then by the most feasible route to the Parker Paper Mill in Westville.

Also authorized was a branch line from Chapel and Olive streets through Olive and East Water streets to Custom House Square and a branch from Grand Street through East and Bridge streets to the Steamboat Dock, with a line back along East Water Street to Olive Street. Further authorization provided for a line from Chapel and York streets through York, George and Fleet streets to Custom House Square.

The charter also allowed certain other lines to be built should a majority of the property owners along those streets so request. It was forbidden, however, to lay any track in Elm Street or in Chapel Street between Olive and East streets, these being the better residential streets of the city. Surely the leading citizens did not want the noise and bustle of horsecars at their front doors. The restriction on Chapel Street was removed in 1862, but Elm Street saw no tracks until after 1880.

It was also provided in the charter that no branch-line construction could be undertaken before the main line from Fair Haven to Westville was complete, and that any branch undertaken must be completed before another could be started.

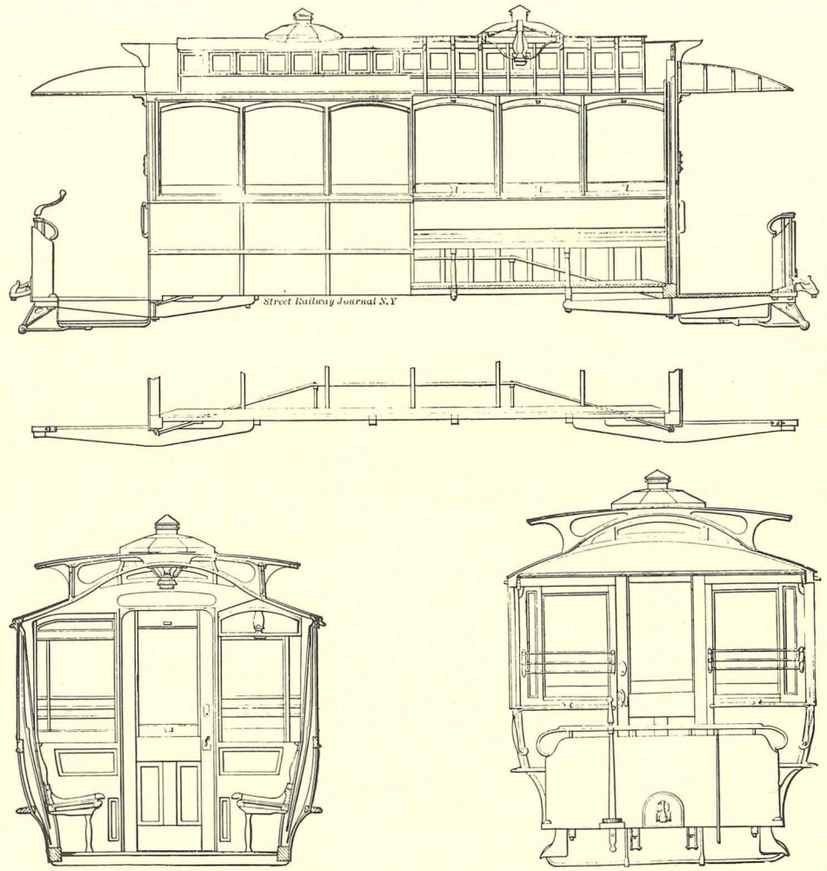
Motive power, according to the charter, was to be supplied by animals, and the rail used should be "of the pattern used on the best constructed horse railroads in the City of Philadelphia, commonly called the Philadelphia Flat Rail." This rail was described as being flat iron about five inches wide and having a ridge along the outer edge for the wheels to ride upon. It weighed about 28.5 pounds to the yard.

Capitalization of the line was to be $100,000, divided into shares of $25 each. The shares were all taken in two days.

The charter permitted a five-cent fare to be charged from Fair Haven to any point in the city east of York Street and a five-cent fare from Westville to any point in the city west of Olive Street. The same fare would be charged from any point in the city to any other point in the city.

The railroad would have to comply with the regulations of the City of New Haven in regard to gas, water and sewer pipes, as well as grading and paving of the streets.

*Grand Street became Grand Avenue in 1887.



Construction drawings of a Stephenson-built horsecar, ca. 1890. From C.B. Fairchild, Street Railways *(1892).*

The company was made responsible for paving the streets between the rails and for twenty-four inches on either side of the rails.

On October 19, 1860 the Fair Haven & Westville Railroad Company entered into an agreement with one S.R. Dickson, contractor, for the construction of the line, including real estate and equipment, from the eastern terminus in Fair Haven to Parker's Mill in Westville for the gross sum of $100,000. The company reserved the right to stop construction at any point and pay for the completed portion of the line. Work proceeded until winter weather arrived and was resumed early in the spring of 1861. Much of the rail was laid in cold weather without provision for expansion. When warm weather arrived, many of the rail sections forced themselves out of line and had to be shortened by the contractor.

The original line was single track with four turn-outs, or passing tracks, provided between Fair Haven and Chapel Street. The turn-out located at the stables on Grand Street was doubled in length by the contractor to allow space for switching the cars. All grading was done with gravel and shells, while belgian blocks were used as paving between the rails from the start.

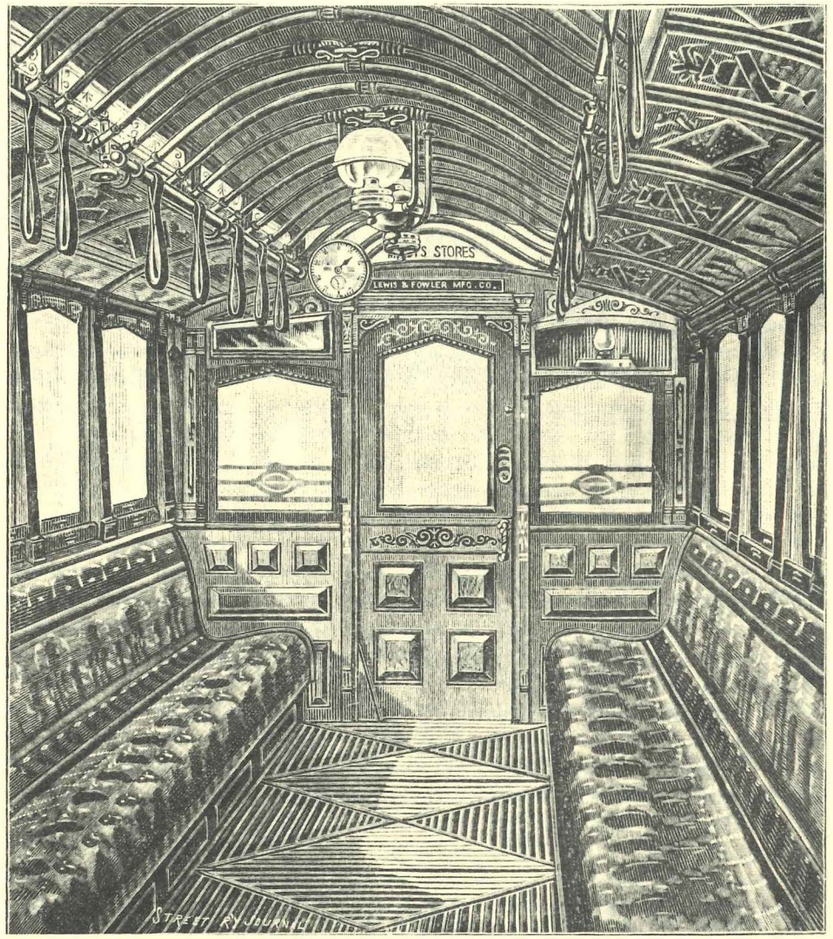
The local press paid scant attention to the progress of the Fair Haven & Westville, possibly having more than enough Civil War news to fill its columns. On May 1, 1861 the *New Haven Register* reported, "The first trip on the horse railroad was made yesterday afternoon. The track is complete from Fair Haven to the corner of Chapel and State Streets and is being put down through Chapel Street. The car used yesterday is handsomely got up and an easy vehicle." Four days later a regular service with twenty-four-minute headways was initiated. Thus began a rail service in the streets of New Haven which was to endure for eighty-seven years.

On June 11, 1861 the *Daily Palladium* reported that the horse railroad had been very busy the previous day carrying 1,730 passengers.

The roster in June 1861 included ten cars, forty horses and twenty sets of harness. Twenty-two men were employed, as follows:

Position	*Number employed*	*Rate of pay*
Conductor	7	$ 1.75 per day
Driver	7	1.75 per day
Laborer	3	30.00 per month
Stable hand	1	40.00 per month
Stable hand	1	20.00 per month
Stable hand	2	16.00 per month
General Overseer	1	53.00 per month

On July 9, 1861 the contractor was paid $80,000 for the line from the old brick church on Grand Street (Clinton Avenue) through Grand Street, Olive Street, Chapel Street, York Street, Broadway and Whalley Avenue to Howe Street. Then, on October 8, he received $17,000 for completing the line from Clinton Avenue to the terminus at the Phoenix Hotel on the corner of Grand and Quinnipiac streets.



The interior of a horsecar built by Lewis & Fowler, Brooklyn, New York. Identical cars were used in New Haven. Illustration from Street Railway Journal, *1889.*

A treasurer's report dated August 14, 1861 stated, "The whole number of passengers carried according to the return of money by the conductors and the sale of tickets from the first day of May to August 14 is 108,986 and it should be remembered that the road was opened by two cars and was gradually increased so that it is only within the last forty days that the company has had a full equipment and horses."

No sooner were the cars running than troubles cropped up. The ends of the flat rail had a tendency to lift up in service and catch the wheels of passing carriages and wagons, leading to many claims against the company for damages.

The first cars were drawn by a single horse and could not climb even a slight incline when fully loaded. Soon helper teams were stationed at Grand and State streets to assist cars up the grade and over the railroad bridge. Another helper team was stationed on Chapel Street at Temple to help cars up the hill to College Street. In 1863 the first two-horse teams were put in use, but at the same time larger and heavier cars were purchased. Thus the need for helper teams continued. The helper teams waited at the foot of the grade until a car approached. The helper teamster then hitched his team ahead of the regular team and mounted the front platform of the car for the ride uphill. At the top the helper team was unhitched and walked back down the hill to await the next car.

Once the rails were in the streets, residents of New Haven became concerned about their right to drive across, parallel to or straddling the rails. Some inventive people thought to equip their vehicles with flanged wheels so that they might run upon the rails. This resulted in a law, passed in 1861, giving users of the streets the right to drive across or parallel to the rails but making it illegal to fit a vehicle to run upon the rails.

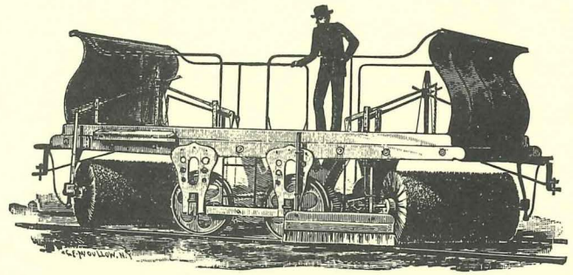
In winter weather the cars were cold, no heat being provided. Straw was spread on the floor to a depth of eight or ten inches in an effort to keep the passengers' feet warm. With the cars closed up, fumes from the kerosene lamps mingled with the odor of packed humanity and damp, soiled straw to give the cars an unforgettable scent. In addition the straw was a fire hazard, although most fires were quickly stamped out.

Sweeping the used straw from the cars after a day's use was a job eagerly anticipated by the stable help, as often coins and other items of value, lost during the day, could be retrieved.

Another problem in the beginning—and one that persists to this day in public transit—was overcrowding during the rush-hour period. This was overcome to some extent in the early days by starting the car and then stopping the horses quickly while winding on the hand brake. Momentum moved the standing passengers forward, allowing the conductor on the rear platform to push the last few passengers inside the car.

Snow was another serious problem from the start. In the early years of operation, an attempt was made to use sleighs or omnibuses fitted with runners, but this was not

a profitable arrangement and was soon discontinued. Small, home-made "V" plows attached to the cars proved ineffectual. In 1870 an eight-horse plow was purchased, and in 1886 a large, eight-horse sweeper was obtained from the Brooklyn Supply Company.



A horse-drawn snow sweeper built by the Brooklyn Railway Supply Company. Engraving from American Street Railways.

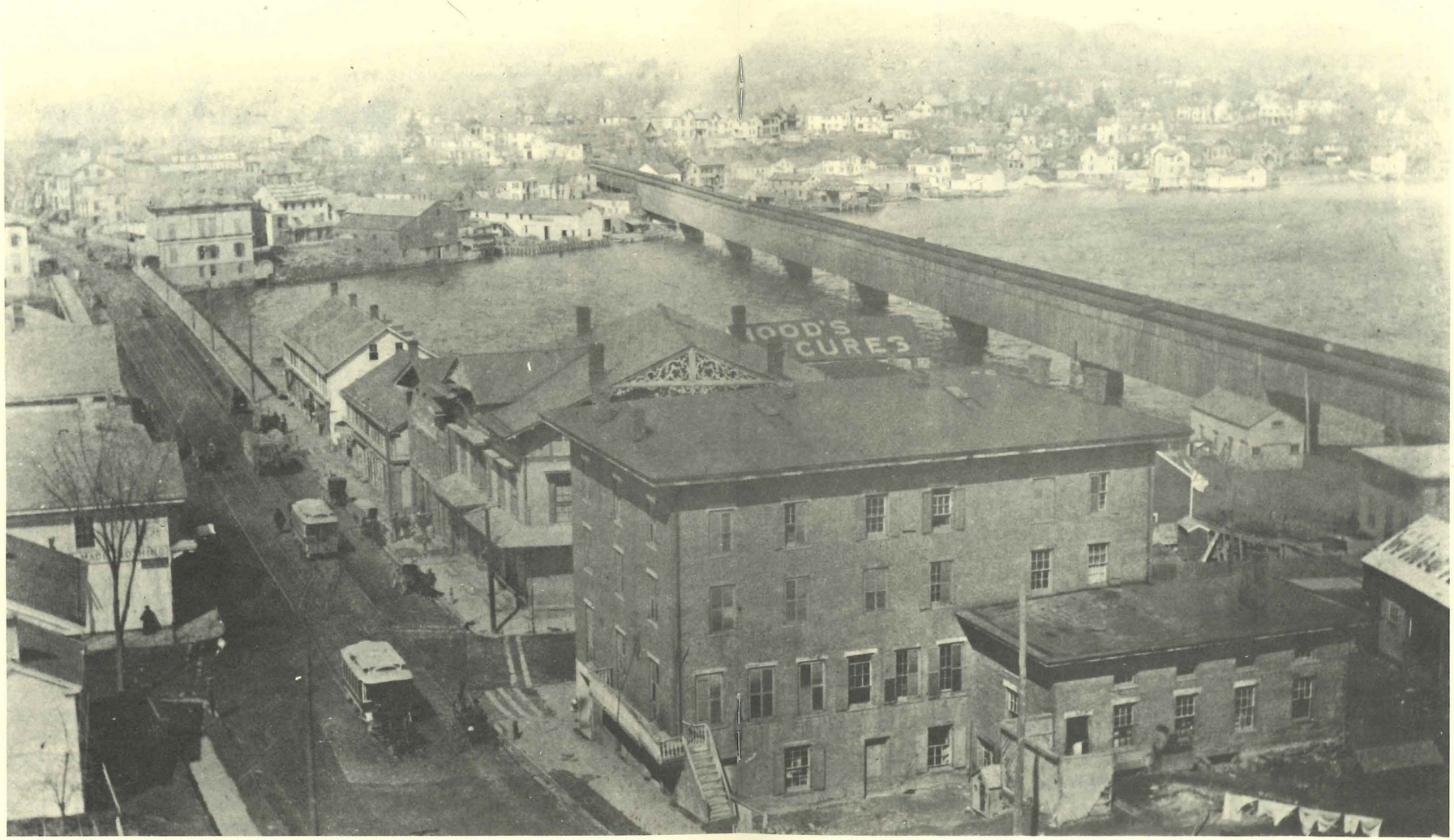
The sweeper weighed about two and a half tons and was fitted with a revolving broom at either end, these being geared to the axles so that as the car moved forward both brooms revolved, throwing the snow off the track. Providing sufficient adhesion between the wheels and the rail to turn the brooms was a serious problem that was solved by use of a deep flange on the wheels which actually ran on the bottom of the flangeway and provided additional adhesion.

In 1878 small snow scrapers were attached in front of the wheels on eight cars. These proved quite effective in pushing light snow off the rails, and soon all cars were so equipped.

Cold weather was hard on the car crews. The driver, limited by his duties to the front platform, bundled himself up in coats and sweaters and then donned an oversize overcoat. He might also wrap newspapers around his chest under the overcoat. A heavy hat with ear laps was a necessity, and scarves wrapped around his neck and face often left only his eyes uncovered.

During severe storms and especially cold weather the company served hot coffee to the car crews and kept a crew on hand to relieve men who had become chilled through. One drug store along the route was designated an emergency hospital for the treatment of frostbite and minor injuries.

Operation of the big plows and sweepers was dangerous work. The eight-horse teams were hard put to keep the machines moving, and horses could and did slip and fall on ice and hard-packed snow, while the machine might derail for the same reason. The crews, consisting of eight to ten men, soon became chilled through and covered with snow. Custom called for passengers on passing cars to contribute toward drinks for the cold and weary crews.



Grand Avenue, showing the end of the streetcar line and the Quinnipiac River bridges. The railroad bridge (right) was demolished about 1894. (Hall collection, BERA)

HORSE RAIL ROAD.

The Fair Haven and Westville Horse Railroad will be opened on Saturday afternoon at 3 o'clock with an excursion trip for invited guests. The Town and City authorities, with other gentlemen, will be present. We understand that four cars, preceded by a band of music, will start from the corner of State and Chapel streets; the trips will be kept up during the afternoon. Should the weather not be pleasant the excursion will be postponed.

NEW HAVEN AND FAIR HAVEN

HORSE RAILROAD.

Cars leave FAIR HAVEN every twelve minutes, commencing at 6:20 a. m., and ending at 9:44 p. m.

Cars leave RAILROAD DEPOT for FAIR HAVEN every twelve minutes, commencing at 7:08 a. m., and ending at 10:32 p. m.

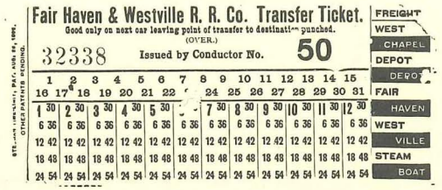
Cars leave RAILROAD DEPOT for BROADWAY every twelve minutes, commencing at 6:44 a. m., and ending at 10:08 p. m.

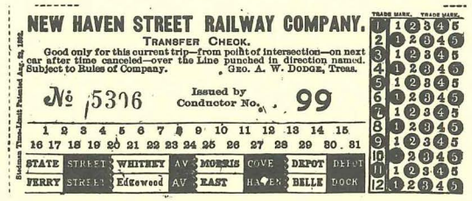
Cars leave BROADWAY every twelve minutes, commencing at 6;56 a. m., and ending at 10:20 p. m.

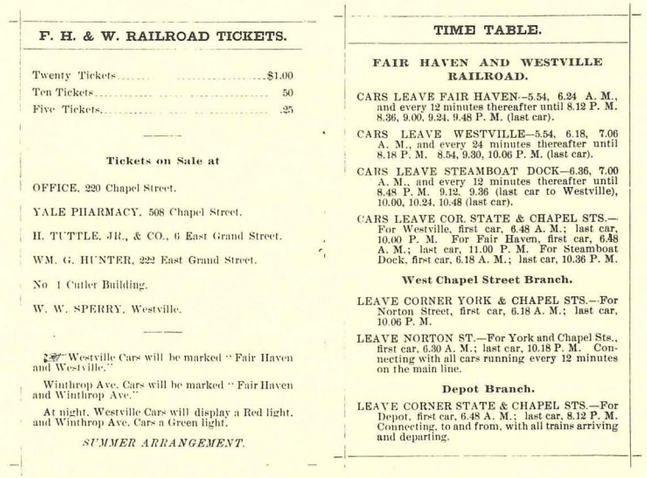
☞ The fare is FIVE CENTS from Broadway to Fair Haven, and no change of cars.

je14d1f E. S. ROWLAND, Secretary.

Announcements from the New Haven Daily Palladium: *Friday, May 3, 1861 (top); and Tuesday, July 2, 1861 (bottom). (Beinecke Library, Yale University)*







F. H. & W. RAILROAD TICKETS.

Twenty Tickets.....$1.00
Ten Tickets.....50
Five Tickets.....25

Tickets on Sale at

OFFICE, 220 Chapel Street.

YALE PHARMACY, 508 Chapel Street.

H. TUTTLE, JR., & CO., 6 East Grand Street.

WM. G. HUNTER, 222 East Grand Street.

No 1 Cutler Building.

W. W. SPERRY, Westville.

☞ Westville Cars will be marked "Fair Haven and Westville."

Winthrop Ave. Cars will be marked "Fair Haven and Winthrop Ave."

At night, Westville Cars will display a Red light, and Winthrop Ave. Cars a Green light.

SUMMER ARRANGEMENT.

TIME TABLE.

FAIR HAVEN AND WESTVILLE RAILROAD.

CARS LEAVE FAIR HAVEN.—5.54, 6.24 A. M., and every 12 minutes thereafter until 8.12 P. M. 8.36, 9.00, 9.24, 9.48 P. M. (last car).

CARS LEAVE WESTVILLE—5.54, 6.18, 7.06 A. M., and every 24 minutes thereafter until 8.18 P. M. 8.54, 9.30, 10.06 P. M. (last car).

CARS LEAVE STEAMBOAT DOCK—6.36, 7.00 A. M., and every 12 minutes thereafter until 8.48 P. M. 9.12, 9.36 (last car to Westville), 10.00, 10.24, 10.48 (last car).

CARS LEAVE COR. STATE & CHAPEL STS.—For Westville, first car, 6.48 A. M.; last car, 10.00 P. M. For Fair Haven, first car, 6.48 A. M.; last car, 11.00 P. M. For Steamboat Dock, first car, 6.18 A. M.; last car, 10.36 P. M.

West Chapel Street Branch.

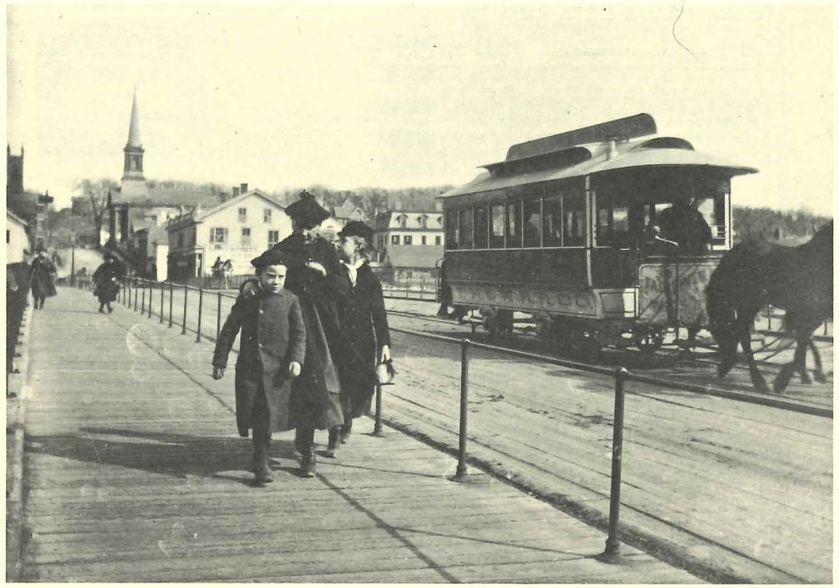
LEAVE CORNER YORK & CHAPEL STS.—For Norton Street, first car, 6.18 A. M.; last car, 10.06 P. M.

LEAVE NORTON ST.—For York and Chapel Sts., first car, 6.30 A. M.; last car, 10.18 P. M. Connecting with all cars running every 12 minutes on the main line.

Depot Branch.

LEAVE CORNER STATE & CHAPEL STS.—For Depot, first car, 6.48 A. M.; last car, 8.12 P. M. Connecting, to and from, with all trains arriving and departing.

Ticket, transfers and timetable. (From the collections of F.S. Bennett and Morley Kelsey)



Stephenson-built car No. 32 on the Grand Avenue Bridge.
(Hall collection, BERA)

In exceptionally heavy snowstorms it was not uncommon for the line to cease operation. In the heavy snows of 1877 no cars ran for almost two months, depriving the company of 160,000 fares.

While plowing and sweeping cleared the tracks, it left the snow in the street, where it impeded other traffic. This finally resulted in a law requiring the street railroad to remove, or have removed, half of the snow in the streets through which it ran, the city to remove the remainder. In 1883 the Fair Haven & Westville removed over 6,000 wagonloads of snow at a cost of $524.

Another problem faced by the company was the long waits in passing tracks for opposing cars. This raised havoc with the schedules and exasperated the passengers. Not until the double-tracking was this worry eliminated.

Still another irritation to the passengers in the early days was the lack of destination signs on the cars. Prospective passengers had to ask the crews where the car was bound before boarding.

With the horse railroad in operation, the omnibus was doomed. An omnibus jolted along at four miles per hour over cobblestone pavements, while the streetcar's iron wheels on iron rails provided a much smoother ride at six miles per hour. In addition, the horsecars moved freely on the rails, permitting the same team of horses

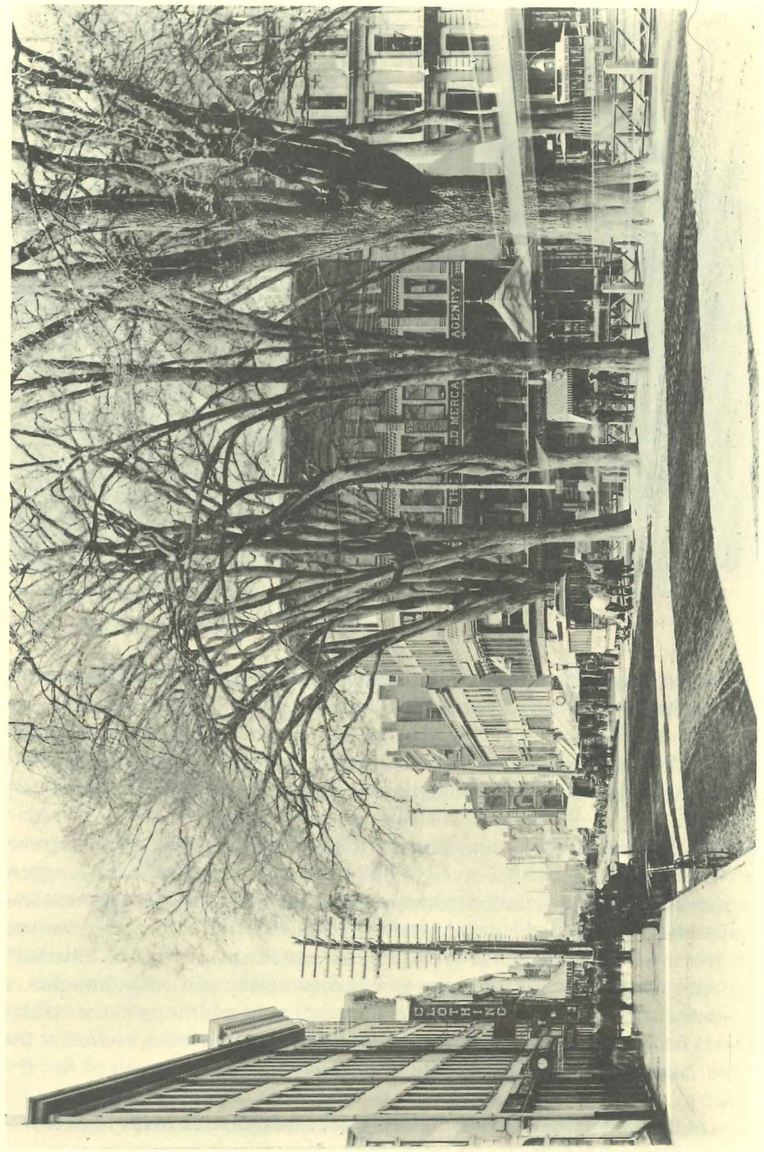
A horsecar leaving Westville, with West Rock in the background. (Henry S. Peck photograph in F.S. Bennett collection)

to move more passengers than they could when hitched to an omnibus. It was usual for the horse railroad to buy up the omnibus franchises. On July 28, 1862, the Fair Haven & Westville Railroad paid $2,250 for the King Orange Street omnibus franchise, $525 for four sleighs and $225 for sundry items. One exception was the Orange Street omnibus line, which continued in operation until taken over by Connecticut Transit.

By 1863 manpower shortages brought on by the Civil War were troubling the Fair Haven & Westville management. Forced to hire men who were rude to passengers and lax in their duties, and who failed to keep cars to the schedules, management was unable to maintain the desired level of service. If rebuked, these men often walked off the job, leaving the Fair Haven & Westville to make the best of a sorry situation.

In 1864, with the service running more or less smoothly and with thoughts of expansion in their minds, the board of directors approved additions to the stables and car sheds on Grand Street. Improvements included a two-story section at the front of the buildings to accommodate rooms and sleeping quarters for the employees.

Extension of the track had been tabled during the Civil War due to the high cost of labor and iron, but in 1865 the track was extended out West Chapel Street to Day



Church Street at Chapel looking south. A New Haven & Centerville car, supplied by the Stephenson Company in 1891, waits at the end of the line. At the far right is a white Depot car. (F.S. Bennett collection)

Street and through East and Bridge streets to the Steamboat Dock. After the track on Whalley Avenue had been extended to Fountain Street, eleven-minute headways were established between Fair Haven and York Street, and twenty-two-minute headways on West Chapel Street and on Whalley Avenue were maintained. Hamilton Park, located off Whalley Avenue east of the West River, was opened in 1859 and provided the Fair Haven & Westville with considerable revenue from the additional ridership. The park covered forty acres and included a trotting park, picnic area, provision for exhibits and ice skating in season.

In 1865 the New Haven & West Haven Horse Railroad and the New Haven & Centerville Horse Railroad entered the picture. This brought comparatively easy travel to the villages and created a real estate boom. It was no longer necessary for a working man to reside in a tenement close to his place of employment. For a five-cent fare he could travel to a less crowded area of individual homes. Residents of the outlying areas could visit the shops and facilities of the central city easily and at little cost. A feeling of camaraderie grew between the regular riders and the crews and among the riders themselves. It was not uncommon to see a baby carriage hung over the brake staff on the rear platform of a car while the mother and baby rode comfortably inside. The horses (on their own initiative) stopped at every watering trough along the route without regard for schedules.

A charter amendment in 1866 permitted the fare to be raised to six cents, although tickets good for one ride were sold at five for twenty-five cents.

In October 1870 the bridge over the West River in Westville was carried away in a storm, and it was ten months before rail service to the end of the line was restored. Because of pressure from the riding public, an omnibus service was operated from Hamilton Park to the end of the line in the interim.

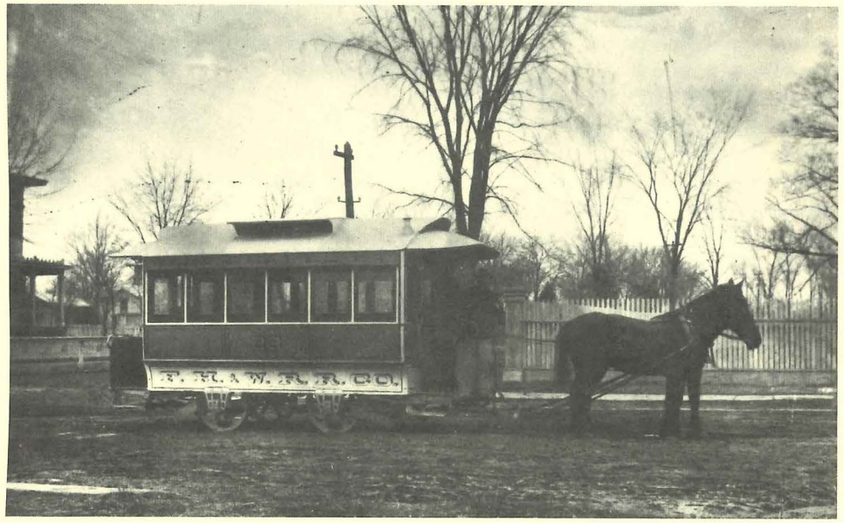
At this time the roster of equipment included thirteen large cars, three small cars, one snow plow and ninety-six horses. The total number of passengers carried in 1870 was 1,210,846, only 4,022 more than the previous year. This meager increase was blamed on the loss of the bridge in Westville, disruption of the streets for repaving, and removal of old sewers in Chapel Street. In this year permission to use a steam dummy on lines west of Howe Street was received, but there is no record to indicate that one was used.

Early in 1871 a fire destroyed the stables, repair shop, blacksmith shop and a large part of the car shed on Grand Street. No cars or horses were lost, and only a single run of the cars had to be canceled. Temporary stables were quickly erected, and by the first of December new facilities, claimed to be the best in the country, were ready for use. Stalls for 113 horses were provided.

During the summer, other horse railroads in the city were plagued by disease amongst their horses. The Fair Haven & Westville horses were spared, due, the company said, to the exceptional care and good feed given the animals.

Track work was a continuing expense. During the summer of 1871 the track from York Street to Hamilton Park had to be raised to meet the new grade established by

Fair Haven & Westville's Stephenson-built car No. 23, stranded on Grand Avenue in the blizzard of March 17, 1888. (Hall collection, BERA)



The same car, No. 23, at West Chapel and Norton streets in more favorable weather. (F.S. Bennett collection)

the city for Whalley Avenue. This work, including one and three quarters miles of new timber, cost the company $2,000.

At the close of 1871 9,764,033 passengers had been carried on the line since its inception in 1861. The year 1872 was a troubled one for the Fair Haven & Westville Railroad. The Tomlinson Bridge Company raised the level of its roadway between the bridge over the Quinnipiac River and Bridge Street by twelve inches, forcing the railroad to raise and rebuild its track. The track in East Street had to be removed for several months to permit sewer construction. This terminated the Steamboat Dock service for the duration. Then the floor of the stable and car house on Grand Avenue had to be filled with sand to a depth of twenty-four inches to meet the new grade established by the city for the surrounding streets.

On April 27, service to Westville was increased to seventy-seven trips each day on a twelve-minute headway. The cost of horses and cars for this additional service was $3,000, and the additional operating cost was $12 per day. This change, the company said, was a great convenience to the public but unprofitable for the company.

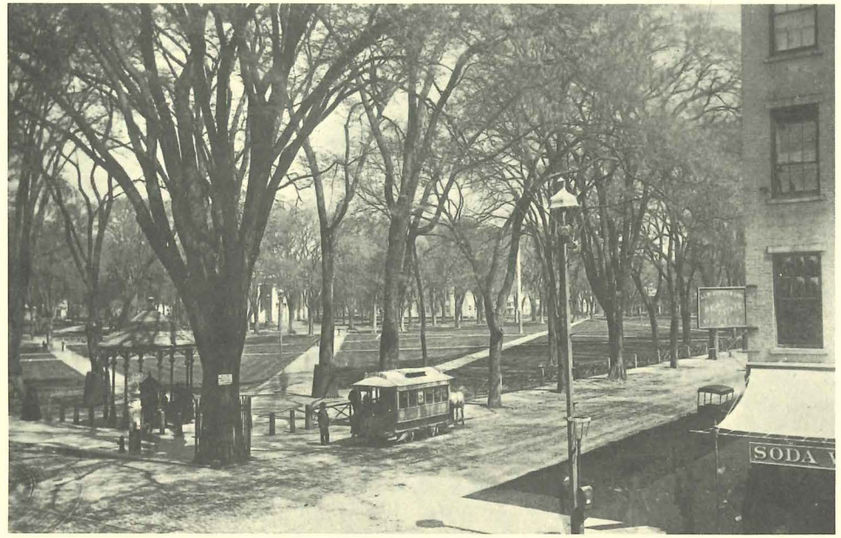
In 1872 the street railway industry in the eastern portion of the United States faced a crisis when disease raced through their stables. "The Great Epizootic," as it was called, did not spare the Fair Haven & Westville. The company stoutly maintained that its stables and feed were not at the root of the problem. Some horses were pastured in the country, and others were sold, while the management sought to buy healthy animals. Two of the twelve cars normally running at this time had to be canceled.

There were 105 horses and fifteen cars on the roster at this time. The working life of a horse was six years. A good horse cost $100 and brought from $40 to $60 when sold after retirement, usually to a farmer who could get more years of farm work from the animal. Sale of manure from the stables brought in about $50 each month.

It was necessary to maintain many more horses than cars. Twelve to fifteen miles per day was usually the limit imposed on a horse, after which it was returned to a stall of ample proportions in a stable which was clean and well kept. The feed was of high quality, and a daily grooming kept the animals looking their best. The Humane Society kept an eye on the teams and was quick to notice an animal not in the best of condition. This was not only an age when the welfare of the animals was a public concern; the investment in the horses had to be protected.

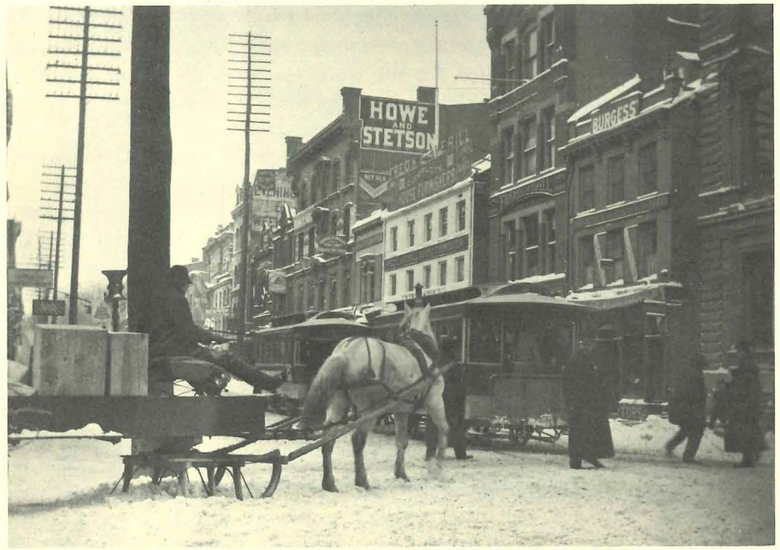
An amendment to the charter in July 1872 allowed construction of a branch line from the railroad crossing on East Chapel Street through East Chapel and East Pearl streets to Grand Avenue. An alternative to East Pearl Street was South Front Street. Many years passed before this line became a reality.

By the end of 1874 the Fair Haven & Westville had carried almost fourteen million passengers since the first run in 1861. The ridership was slightly higher than in 1873, but the net profit from the operation was lower. The management blamed this on the high cost of feed and on the West Chapel Street branch, which was paying only about half of its operating cost. There were now 116 horses on the roster, and two new cars

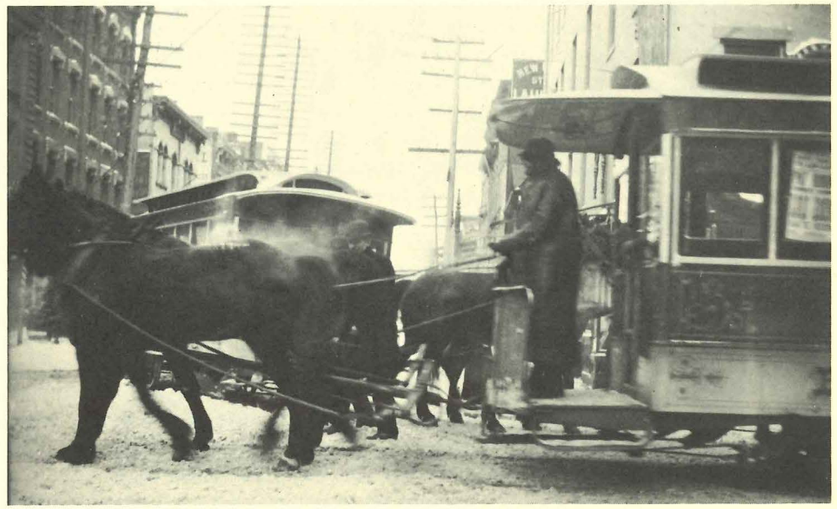


New Haven & Centerville car No. 5, ca. 1885. (F.S. Bennett collection)

Two open electric cars of the West Haven Horse Railway on Chapel Street. Car No. 59 (left), built by the Newburyport Car Company in 1892, has an unusual roof design. New Haven & Centerville and State Street Line horsecars are at right. (NHCHS photo)



Chapel Street looking west at State Street. (F.S. Bennett collection)



Looking north on State Street at Chapel. (F.S. Bennett collection)

were ordered to replace two that were considered beyond economical repair.

In 1875 the number of passengers carried dropped to 1,209,277. This was 51,236 less than in 1874. Reasons given for the decrease were sewer construction on Whalley Avenue, which caused delays of up to two hours; and the West Chapel Street line, which now operated to Norton Street and required two cars and ten horses but carried only a few more passengers than when operating to Day Street with one car and five horses.

On May 24, 1875 the New York, New Haven & Hartford Railroad opened its new station at the foot of Meadow Street, replacing the old depot at Chapel and Union streets. This led the Fair Haven & Westville to build a branch down State Street from Chapel Street and through Union Street to the new building at Meadow Street. This line was opened on August 9 and by the end of the year showed a net profit of $1,106. Due to the narrow width of State Street between Chapel and George streets, that portion of the line was limited by charter to a single track. The remainder of the route was double tracked.

The business depression continued through 1876, and the Fair Haven & Westville made every effort to reduce expenses. Employees not absolutely essential to the operation were laid off, and salaries of all officers except the secretary and treasurer were reduced. Workers' pay was reduced twelve to fifteen percent, with the exception of the conductors and drivers, who continued to receive $2 per day. There were still 128 horses to be stabled and fed. Total ridership for the year was 1,179,766 persons.

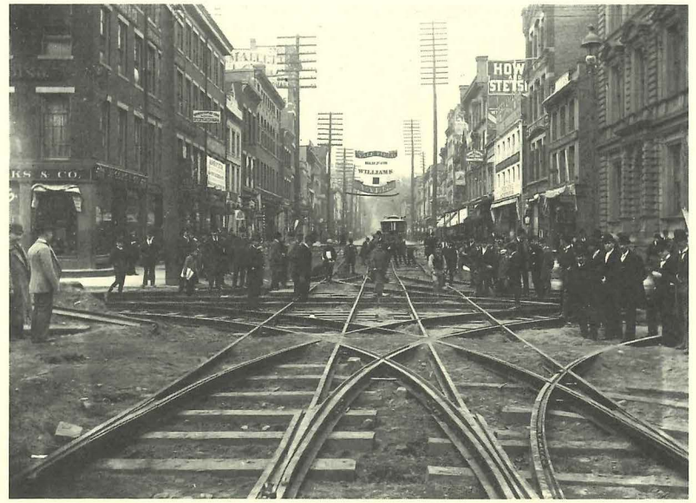
In 1877 the number of passengers decreased by 161,930. The business depression and severe snowstorms which caused the suspension of service for two months were blamed. In April the conductors' and drivers' pay was reduced to $1.75 per day.

In 1878 the removal of the Derby Railroad depot from State Street to Meadow Street resulted in a drop of 1,153 riders on the depot line. Total expenses for the year declined almost $2,000 due to the various economy measures. One new car was purchased for use on the West Chapel Street line, one small car, in use sixteen years, was turned in on a larger car and several older cars were partially rebuilt. Snow scrapers were installed on eight cars at a cost of $285, and more than $2,000 was spent on track work.

Also in 1878, at the Bridge Street level crossing over the New Haven Railroad tracks, a car valued at $300 was struck and damaged beyond repair. This incident was one of several which led to a state law prohibiting construction of a street railway line across steam railroad tracks at grade.

In 1878-79 business increased, due in part to the Moody and Sankey religious meetings.* Service on the depot line was disrupted for two months by sewer construction, causing a loss of revenue.

*Between March 24 and May 10, 1878, more than 200 meetings were conducted by these evangelists at their tabernacle, located at Whalley Avenue and Dwight Street. (See NHCHS *Journal,* vol. 23, no. 2.)



New intersection "special work" is laid at Chapel and State streets, ca. 1890. (F.S. Bennett collection)

Installation of heavy rail for electric cars at Church and Chapel in the 1890s. (Henry Gladding collection, NHCHS)

At this time tickets were being sold at the company's offices, as well as two other locations in New Haven, two in Fair Haven and one in Westville, in quantities as low as five for twenty-five cents. The cash fare was still six cents. Starting on May 1, 1882, tickets were sold by conductors on the cars as well as at the other locations.

The year 1880 saw increased passenger loads on all lines. The sale of tickets increased from 223,900 in 1879 to 263,930. During the fall, the track on Whalley Avenue from Hamilton Park to the West River was paved with cobblestones. These were furnished and delivered trackside by the city and installed by street railroad crews. This paving was to eliminate the washout problem that had existed at this point for many years. Other track work included all new timber on Whalley Avenue from Howe Street to the West River and paving with cobblestones on Grand Avenue from Clinton Avenue to the Quinnipiac River.

In 1880 disease again invaded the stables, ninety percent of the horses being affected by pinkeye. Three died and thirteen were listed as unable to work at the year's end.

In 1883 the bridge over the Mill River in Barnville was declared unsafe by the city. In order to maintain service for its patrons while the city replaced the ailing structure, the Fair Haven & Westville erected a temporary bridge to carry its cars across the river.

Sunday service was initiated on June 13, 1884 and averaged 1,130 riders per Sunday for the balance of the year. Total receipts from this service were $2,134, while expenses were $2,405, making the Sunday service a losing proposition for the company but a boon to many of New Haven's citizens, including churchgoers. For the year 1885 a loss of $279 was reported on the Sunday service.

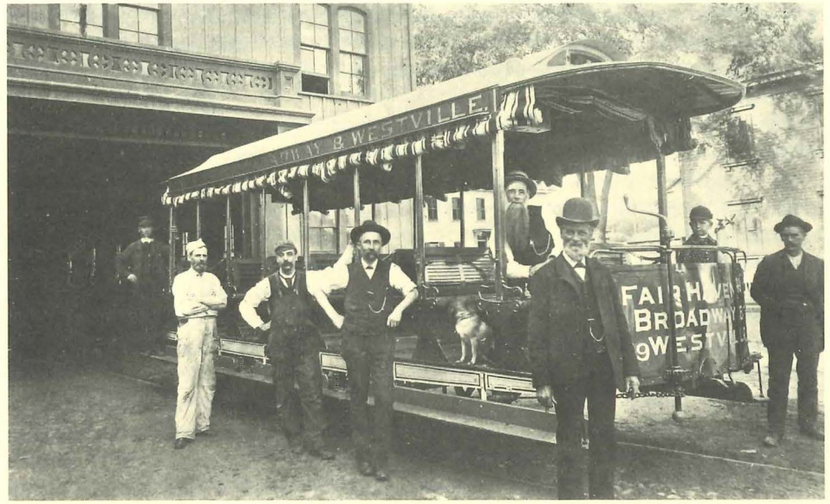
Also in 1885 the West Chapel Street trackage was extended to the West River as a convenience for those traveling to Yale Field. At this time the roster included twenty-two cars and 148 horses.

On March 24, 1886, the Fair Haven & Westville was authorized by a charter amendment to double track its entire line from Fair Haven to Westville, the type of rail used to be approved by the city. After September 1, the amendment allowed the company to charge no more than a five-cent fare from any point on the system to any other point on the system and required that free transfers be issued as needed to complete a trip.

In order to prevent misuse of transfers, early issues were illustrated to show the facial features of seven possible riders, the conductor putting his punch mark on the likeness most resembling the passenger to whom the transfer was issued. There were men with a smooth face, mustache, sideburns, chin whiskers and full beard; women were shown wearing either a hat or a bonnet.

At the end of 1886 the roster showed twenty-eight passenger cars, an eight-horse sweeper and 206 horses.

In 1887 the number of passengers carried rose to 2,157,079 from 1,692,883 in the previous year, but at the same time expenses rose from $64,220 to $88,529, due in



Brill-built open car No. 49 in front of the original Grand Avenue barn, ca. 1888. (Hall collection, BERA)

Open car No. 16 at Savin Rock. (Hall collection, BERA)

part to pay increases, including raising the conductors' and drivers' pay from $1.75 to $2.00 per day and stablemen's pay from $1.25 to $1.50 per day. About $525 was spent for route indicators for the cars, ending some of the confusion about their destinations.

For ten months in 1886, before the double tracking, cars ran every twelve minutes to Fair Haven and every twenty-four minutes to Westville. In 1887, with the double track completed, cars ran between Fair Haven and University Place every six minutes and to Westville every twelve minutes. This resulted in a large increase in operating expenses.

By 1887 the Fair Haven & Westville Railroad Company had become a major force in the city's economy. Each year the number of employees, cars and horses increased with the resulting enlargement of the physical plant on Grand Avenue. The company's general offices were located in the Simpson Block at the corner of State and Chapel streets.

The year 1888, famous for its blizzard, which closed down the Fair Haven & Westville operation for an extended period, saw further increases in service. On May 18 the Sunday service was increased from a thirty-six-minute headway to a twenty-four-minute headway. On July 4 the railroad depot service was increased from a twelve-minute headway to a six-minute headway. At the same time, larger cars and two-horse teams were used on the depot line, adding $310 to the operating expense for the balance of the year. At this time, the roster listed 226 horses and thirty-six cars, seventeen of which had been painted during the year.

By 1891 the number of horses had increased to 283 and the cars to forty-nine, eighteen of which were open cars. Coal stoves had been installed in thirty-one closed cars at a cost of $939, and it was estimated that the cost of operation would be $3 per car per season. Passengers close to the stove were overheated, while those farthest away felt little warmth. Operation of the stove was made the conductor's responsibility, and if he forgot to close the draft while attending to other duties the overheated stove might set fire to the woodwork in the car. In one case a car was totally consumed by flames on Grand Avenue at Front Street, much to the conductor's embarrassment and the company's displeasure.

Shortly before midnight on June 13, 1892, the New Haven & West Haven Horse Railroad operated the first electric street car in the New Haven area. The trip started at the stables on Campbell Avenue and proceeded to Savin Rock, then to Church and Chapel streets in New Haven and back to the stables in West Haven. So successful was the trial run that regular service was started within a few days. The next year saw the State Street Horse Railroad electrified, followed by the Winchester Avenue Railroad.

Opposition to the electric cars represented a variety of fears: the cars would frighten the horses, the wires would fall on the cars in a storm and electrocute the passengers, the wires and poles would be an encumbrance on the streets, the wires

would be a danger to firemen fighting fires, and the suburbs would profit at the expense of the city. New Haven officials, taking a more realistic view, felt that some streets would have to be widened and regraded and some curves eased to accommodate the larger and faster cars.

Probably no group was more anxious for electrification than those Fair Haven residents who lived within smelling distance of the 348 horses housed in the stables on Grand Avenue.

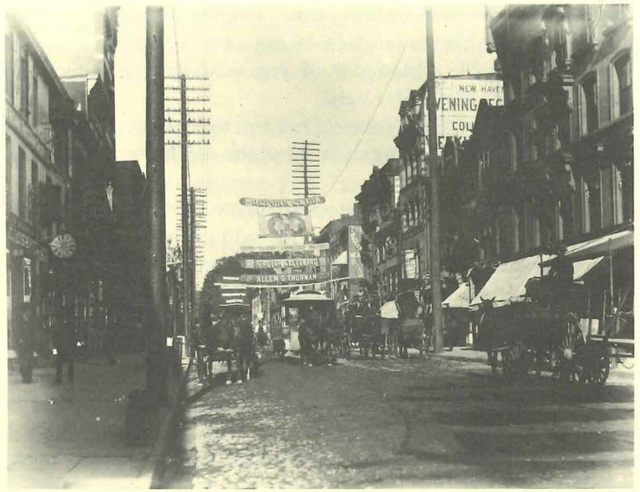
In 1893 charter amendments gave the Fair Haven & Westville the right to build a number of new lines on various streets, including Ferry and South Quinnipiac streets in Fair Haven; Fountain Street, Central Avenue, Tryon Street, Forest Street, Rock Street, Springside Avenue and Wintergreen Lake Road in Westville; and a line through park property to the summit of West Rock. As in previous instances, most of these lines were never built. In the same year the company was given the right to operate its lines "by means of either cable or the overhead or other electric system, or any other motive power except steam, or may make use in part of each of said systems."

In 1894 work on the electrification of the Fair Haven & Westville lines progressed rapidly with $280,192 being spent on construction and equipment. Starting on October 15, seven electric cars were operated with power purchased from the Winchester Avenue Railroad. Then, on November 15, the first engine in the Fair Haven & Westville's powerhouse on the banks of the Mill River at Grand Avenue was started, and on the following day the line operated with its own power supply. By the end of the year only three horsecars were in use, and these were soon discontinued. The 1894 roster included:

24 eighteen-foot electric cars
6 horsecars being converted to electric cars
24 closed horsecars
28 open horsecars
1 horse-powered sweeper
2 electric sweepers
1 tower wagon
35 horses
12 new electric cars on order
1 electric parlor car

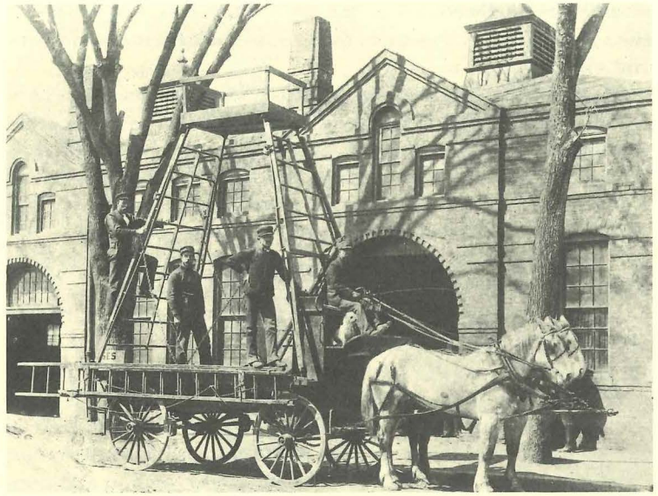
It was the custom of street railways to provide a parlor car for the use of its officials on travels about the system and on visits to other properties. In 1894, the Fair Haven & Westville had built by the Jackson & Sharp Company an eighteen-foot, six-inch vestibuled parlor car. The car was mounted on a Peckham four-wheel truck equipped with two General Electric Company No. 800 motors and was air-brake equipped.

Outside, the car was painted royal blue and striped in sky blue and gold. The window sashes were mahogany, and the end doors were fitted with beveled glass. The interior was painted blue and gold with window shades in two tones of brown. Roof linings were painted sky blue with a dull yellow border and were ornamented with flowers painted in natural colors. The floor was laid with Wilton carpet, and twelve cane chairs, no two alike, were installed. This car passed to succeeding



Looking west at Chapel and State in 1884. (F.S. Bennett collection)

Fair Haven & Westville cars, Brill-built No. 52 (left), and Stephenson-built No. 77 (right), on Chapel Street ca. 1890. (George R. Bradley photo, NHCHS collection)



Fair Haven & Westville tower wagon. (Hall collection, BERA)

Grand Avenue car barn in 1938. (Charles Rufus Harte photo, F.S. Bennett collection)

companies and was finally converted for conventional passenger service. In 1915 it was assigned to the Derby Division of the Connecticut Company and was scrapped there in the 1920s.

The Manufacturers Railway was chartered in 1893 to operate a freight service from Mill River Junction on the New Haven Railroad via a private way parallel to James Street and through East Chapel Street, James Street and River Street to East Pearl Street. This operation used horses and borrowed Fair Haven & Westville equipment until December 11, 1896, when they put their first electric locomotive in service. The Manufacturers Railway charter allowed the Fair Haven & Westville Railroad, The State Street Horse Railroad, The New Haven & Morris Cove Railroad and the proposed New Haven Street Railway to use the track in James and River streets, an arrangement to be worked out between the railroads covering charges for the track use. In East Chapel Street between the private way and James Street the Manufacturers Railway used the Fair Haven & Westville tracks. Operating crews and power for the Manufacturers were supplied by the Fair Haven & Westville.

The New Haven & North Haven Street Railway was built in 1893 and ran out Quinnipiac Avenue from Grand Avenue to Montowese Avenue in North Haven. This line was operated by the Fair Haven & Westville, and an additional fare was charged for the trip.

In 1894 there was agitation to have newsboys aboard the trolley cars of the Fair Haven & Westville, but this was voted down by the board of directors in January 1895.

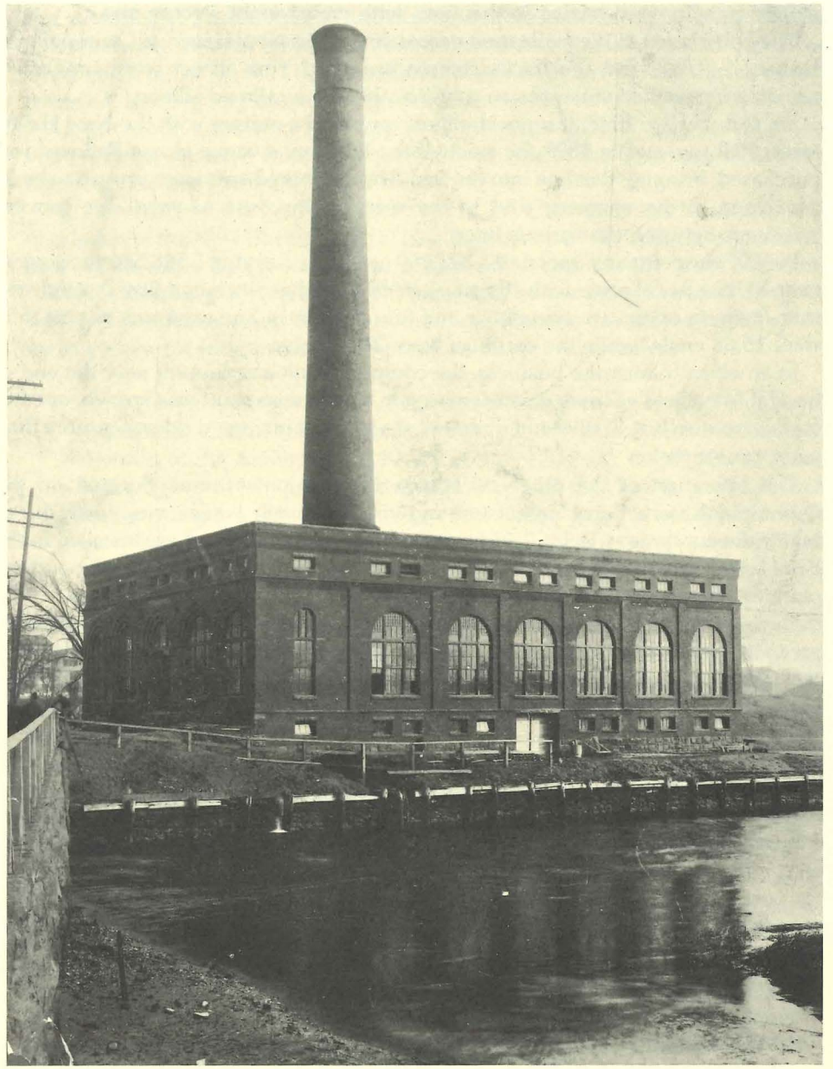
In 1895 a second car barn, a duplicate of barn No. 1, was built next to No. 1 on Grand Avenue. The cellar was concrete, and water lines were installed for car washing and fire protection. These facilities were on the north side of Grand Avenue between Blatchley Avenue and Fillmore Street. The company had slowly been purchasing property in this block for several years.

On March 22, 1895, the line from the railroad crossing on East Chapel Street through East Chapel and East Pearl Streets to Grand Avenue was finally opened. Later, on October 30, 1897, the city opened a new bridge spanning the New Haven Railroad tracks at this point, and through trolley service from Norton Street to East Pearl Street was initiated. On March 27, 1895, track was opened on Water Street between Bridge Street and State Street.

The 1895 operation included 10,660 horsecar miles and 1,199,121 electric car miles. The roster at this time included:

80 electric passenger cars
1 electric snow plow
4 electric snow sweepers
1 tower wagon
1 eight-horse sweeper
6 old horsecars
6 old horsecars used as trailers

The electric operation brought about a need for heavier rail, and in 1896 several miles of seventy- and seventy-four-pound rail was installed. Almost five and one half



The power plant, Grand Avenue at the Mill River, as originally built. Part of it is still standing. The company featured the new plant in an engraving on its letterhead. (Photo in the Hall collection, BERA)

million people were carried in this year, with eighty-eight electric cars.

The Fair Haven & Westville took possession of the New Haven & Centerville on January 1, 1897, and the tracks at Broadway and York Street were connected, allowing Dixwell Avenue cars to run directly to the railroad station.

On October 31, 1898, the stockholders approved a merger with the New Haven Street Railway, and in 1899 the stock of the Whitney Avenue Horse Railroad was purchased, bringing that line into the fold. The combined operation proved to be an advantage to the company and to the riders, who were allowed free transfer privileges between the various lines.

In 1897 the company operated 1,308,660 car miles, carrying 5,538,585 passengers over 20.56 miles of route with 186 employees. The roster included fifty-three closed cars, forty-six open cars, two plows and four sweepers. The expenses per car mile were 15.68 cents, while the earnings were 21.48 cents.

In an effort to increase business, the company built a restaurant near the end of track at Mansfield's Grove. The Momauguin, as the restaurant was known, opened for business on July 3, 1899 and operated at a loss, but increased ridership more than made up for that.

The operation of the old New Haven Railway powerhouse, located on the Quinnipiac River at Ferry Street (now known as Station B), was proving costly due to inefficient equipment. In 1899 additional generating equipment was installed in the Fair Haven & Westville plant (now known as Station A) on Grand Avenue, and the old New Haven Railway plant was relegated to an emergency-only status.

During the summer of 1900, the Branford Electric Railway was completed from the green in East Haven to the center of Branford. The Fair Haven & Westville entered into a five-year agreement to operate this line. Six additional cars were purchased, and a service with twenty-four-minute headways was established from Yale Field to Branford.

In May of 1900 the Fair Haven & Westville purchased the controlling shares in the Winchester Avenue Railroad and the New England Street Railway. At this time the Fair Haven & Westville had obtained by lease, purchase, merger or consolidation the following properties:

New Haven & West Haven Horse Railroad
West Shore Railroad
Winchester Avenue Railroad
Whitney Avenue Horse Railroad
New Haven & North Haven Street Railroad
New Haven & Centerville Street Railway
New Haven Street Railway
New Haven & East Haven River Railroad
Lake Saltonstall Railroad
Edgewood Street Railroad
New England Street Railway
State Street Horse Railroad
Branford Electric Railway

The Fair Haven & Westville Railroad was now the largest street railway operation in Connecticut, with a passenger load for the year 1900 of 16,249,157 persons.

This was a period of double tracking and heavier rail. The track on Derby Avenue

was extended to Forest Street. Until this time there had been four tracks in Chapel Street between Church Street and Temple Street and three tracks between Temple Street and College Street. The former Winchester Avenue Railroad tracks were now removed, leaving only the double track of the Fair Haven & Westville in the street.

A charter amendment in 1901 approved extension of the Derby Avenue line to Milford Road, where it would connect with the line of the Connecticut Railway & Lighting Company running out of Derby.

At a meeting of the Board of Directors in 1901 it was voted to comply with a regulation of the New Haven Board of Health and install "No Spitting" signs in all the cars. At the same time it was voted to lease office space in the Malley Building.

On the morning of August 6, 1902 a majority of the motormen and conductors went out on strike, closing down the operation. The next day the men presented this message to a meeting of New Haven officials and businessmen:

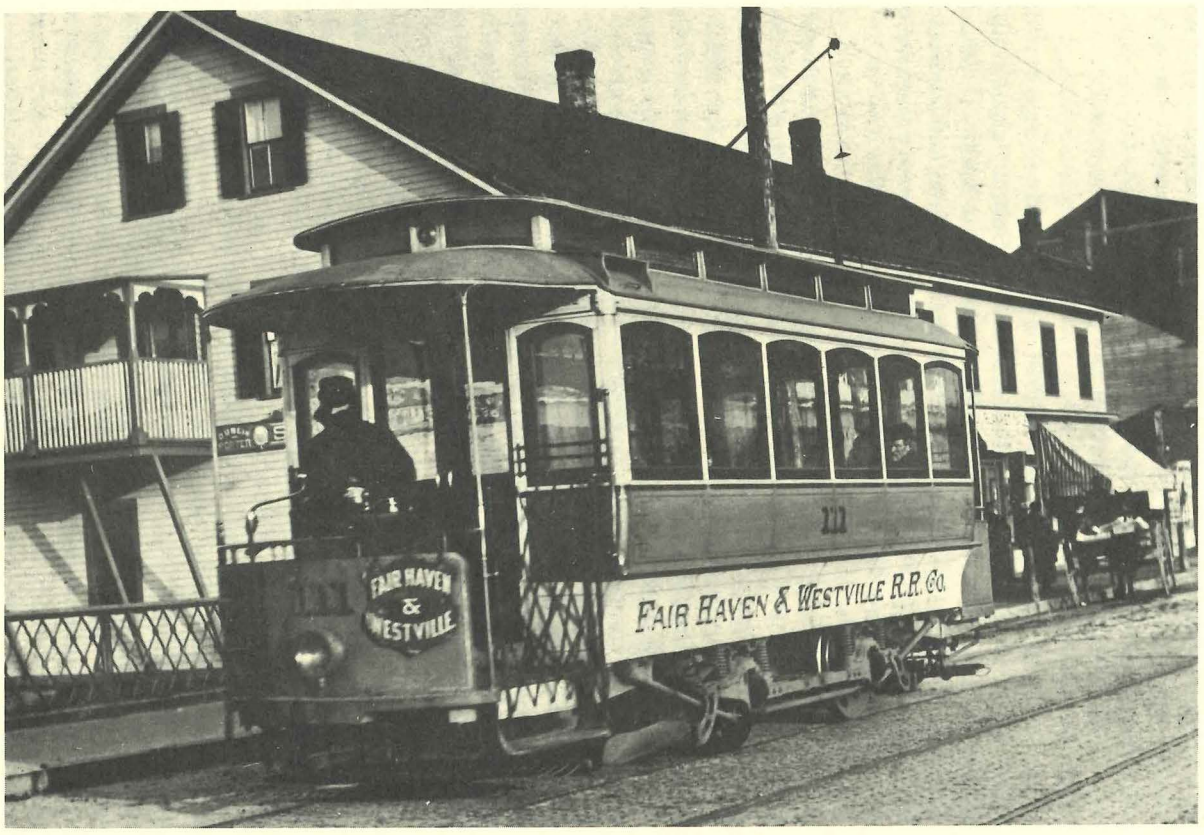
> New Haven, Conn., August 7, 1902, to businessmen, mercantile and Board of Commerce Committee—Gentlemen: we the executive committee of the local division of the Amalgamated Ass'n. of Street Railway employees of America present to your joint meeting our grievance with the Fair Haven R.R. which is; that we simply ask the recognition of our union and the reinstatement of the men who were discharged without just and sufficient cause from their former positions with the company.

The company replied that eleven employees had been discharged previous to a July 29 meeting, at which they understood a union had been formed, that union membership was not disqualifying, and that all men would be treated equally. They said that the men had been discharged for cause, the company being responsible for public safety.

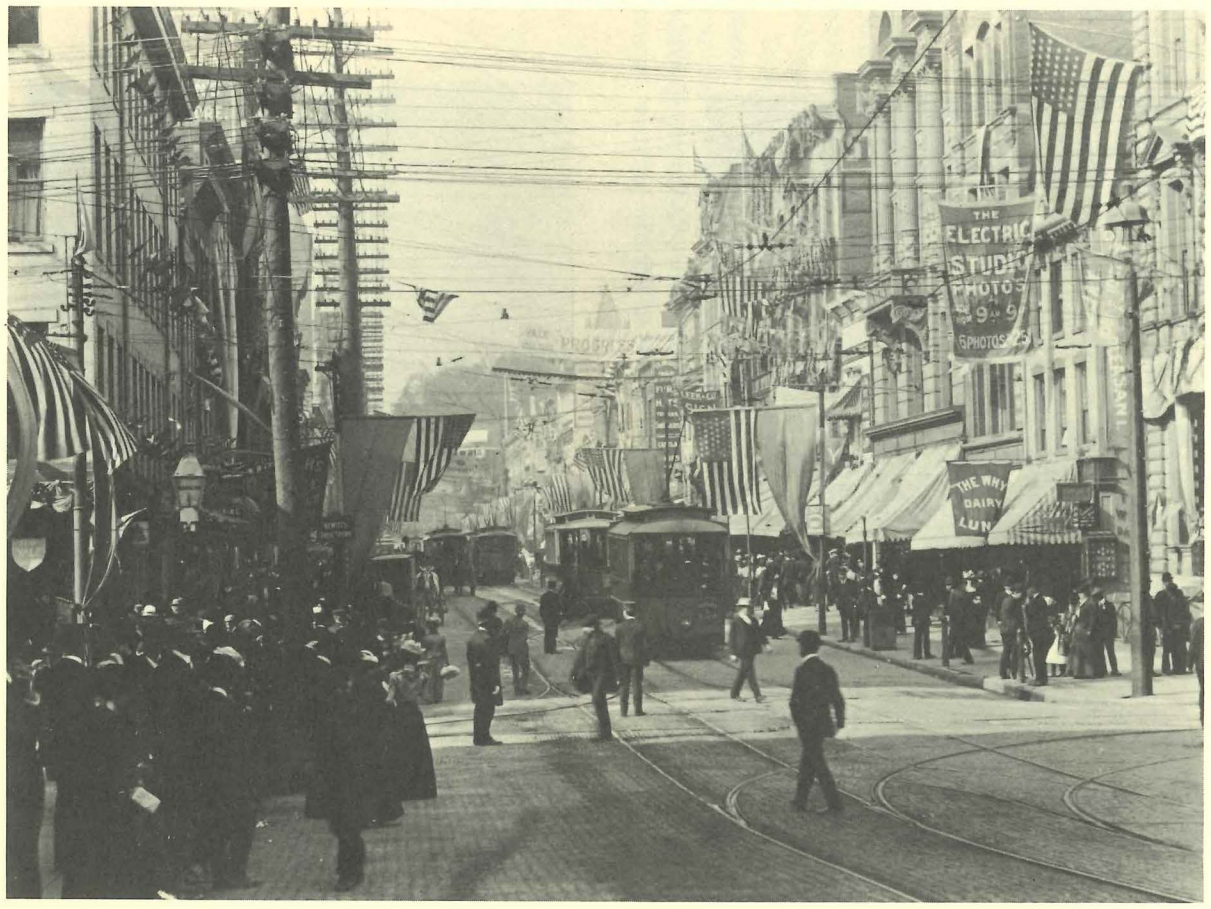
Management was concerned over the loss of revenue and issued a statement saying that if the strike were speedily terminated they would take back all men employed at the onset and would reconsider the cases of the men who had been discharged. During the afternoon of August 9, the men returned to work.

On August 11, 1902, the board of directors voted to equip all double truck (eight wheel) cars with air brakes as rapidly as possible. Later in the same meeting it was voted to sell student tickets at half the normal fare.

On May 18, 1903, there was the threat of another strike. The union requested an increase of five cents per hour for motormen and conductors. The company replied that no mention had been made of pay increases at the time of the strike and that the increase requested would cost the company $60,000 per year. The request was denied. One week later the company, hoping to avert trouble, agreed to pay twenty-five cents per hour as the overtime rate but retain the twenty-cent existing rate as the normal pay rate. This change was accepted by the union and went into effect on May 30, 1903.



One of the Fair Haven & Westville's first electric cars, built by Jackson & Sharp in 1894, approaches the Quinnipiac River bridge on Grand Avenue. (From Amos G. Hewitt, in F.S. Bennett collection)



Early electric cars on Chapel Street in 1901. Nos. 89 and 113 (in foreground) were built by Jackson & Sharp. A Yale University Bicentennial banner hangs above the street. (Hall collection, BERA)

One of New Haven's first double-truck cars, No. 127, built for suburban service by Brill in 1901, at Branford Green soon after delivery. (F.S. Bennett collection)

Open car No. 315 of the Winchester Avenue Railroad, built by Jackson & Sharp in 1899, at Yale Field. Open cars ran to Yale Field (and later Yale Bowl) until October 1947. Car No. 301 is at the Branford Trolley Museum. (F.S. Bennett collection)

Land for a loop track at Yale Field was purchased in 1903. The loop was to be used only for special events such as football games in order to handle the large number of trolleys used.

On February 29, 1904, the New Haven Railroad made a purchase offer for the Fair Haven & Westville which the board of directors felt they could not refuse. Thus on May 20, 1904 it was agreed to accept the sum of $8,700,075 for the property, rights and franchise of the Fair Haven & Westville Railroad and an additional $1,664,000 for the Winchester Avenue Railroad property. This money was to be distributed to the shareholders.

The Fair Haven & Westville and the Winchester Avenue properties were conveyed to the Consolidated Railway, the New Haven Railroad's trolley operation, on May 23, 1904, thus ending forty-three years of Fair Haven & Westville operation on the streets of New Haven. On February 28, 1910, the Consolidated Railway was conveyed to the Connecticut Company, which became the principal operator of trolleys in the State of Connecticut.

Trolleys continued to run on Grand Avenue—the Fair Haven & Westville's first route—until July 18, 1938, and on Whalley Avenue, the western end of the route, until November 15, 1947, when buses were substituted. On September 25, 1948, the last trolley operated on the streets of New Haven and in the State of Connecticut was retired, marking the end of an era.

CONTRIBUTORS TO THIS ISSUE

Frederick S. Bennett, who prepared the maps for this issue, has been a member of the Branford Trolley Museum since its inception in 1947, and he is active in trolley restoration there. He saved the Fair Haven & Westville records from destruction and has donated them to NHCHS.

Morley J. Kelsey was fascinated from early childhood by street railways and electric railroads. He joined the New Haven Railroad in 1936 and retired thirty-seven years later as System Air Brake Superintendent. Mr. Kelsey now spends his time researching the New Haven Railroad electrifications.

John R. Stevens, an architectural historian and consultant, has been involved in the research, restoration and/or preservation of seventeenth- through nineteenth-century buildings, trolley cars and ships. He spends many weekends working on car preservation at the Branford Trolley Museum, of which he is a longtime member.

Tax-Free Life Income Plan Will Benefit Society

A Pooled Income Fund has been established by a local bank, serving as a receptacle for deferred gifts to the New Haven Foundation. Donors contemplating a bequest to the New Haven Foundation for whatever purposes are encouraged to consider instead a capital gift to this Fund, which will yield income to the donor for his or her lifetime before reverting to the Foundation.

A long-time friend of the New Haven Colony Historical Society recently furnished generous future support for the Society in this way, transferring capital to the Pooled Income Fund for the eventual benefit of the Society via the New Haven Foundation. He, meanwhile, enjoys the income, while taking advantage of special tax benefits under current IRS regulations.

These benefits can be explained to anyone interested in helping the Society with a future gift of endowment, by myself or Board members Charles Kingsley and Henry H. Townshend, Jr.

Mrs. Frank C. Hepler
Chairman, Development Committee

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